43290

Environmental Testing and Certification Corp.
261 Kappa Center Parkway
P.O. Box 7306
Edison, N.J. 08818-7306
201-225-6700

ETC

ORIGINAL
(Red)

June 8, 1988

USEPA Region III
Central Regional Laboratory
839 Bestgate Road
Annapolis, mD 21401-3099

Attn: Diane Simms
Quality Assurance Officer

Re: RI/FS - duPont Newport Site

Dear Diane:

Enclosed please find the performance and audit information requested during our teleconference of June 7, 1988. ETC Corp. is a participant in the USEPA Contract Laboratory Program's Performance Evaluation Sample and On-Site Audit Program. These are the same programs used to monitor performance for those laboratories with active sample contracts.

ETC routinely performs all of the analytical and QA/QC requirements of the CLP statements of work for organics and inorganics. ETC provides a number of reporting formats for the analytical data generated, from electronic summary reports to complete technical reports containing all raw and support data. Additionally, ETC can provide TCL Analysis, both organic and inorganic, in a full CLP deliverables package as specified in Section B of the Statement of Work.

I sincerely hope this information will be helpful in your task. Should you have any questions or need any additional information, please do not hesitate to contact June Baker (201-225-6741) at our Edison office.

Sincerely,

John E. Farrell II
Manager, ~~Sales Development~~
and Technical Support

JEF:ja
attachment

pc: Gerrado Amoder, USEPA Region III
Roger T. Gresh, Woodward-Clyde
June Baker, ETC/Edison
Marilyn Bracken, ETC/Edison

CERTIFICATIONS (5/88)

1. Alabama Department of Environmental Management. Laboratory I.D. #40280. Reciprocal with New Jersey parameters.

2. Arizona Department of Health Services. Laboratory I.D. #0083. Reciprocal with New Jersey drinking water parameters.

3. California Department of Health Services. Hazardous Waste Certificate #162 for: Partial Organic, Partial Inorganic, and Physical Property Testing.

4. Connecticut Department of Health Services. Water and Wastewater Laboratory I.D. #0511. Reciprocal with New Jersey parameters.

5. Florida Department of Health and Rehabilitative Services. Environmental Water Testing Cert. Laboratory I.D. #E87074.

6. Florida Department of Health and Rehabilitative Services. Drinking Water Testing Certification. Laboratory I.D. #87262. Reciprocal with New Jersey drinking water parameters.

7. Illinois Environmental Protection. Drinking water Certification. Certificate #100224.

8. Indiana Department of Health. No established certification program. The State authorizes EPA certified laboratories to perform analyses.

9. Kansas Department of Health and Environment. Approval to perform analyses based on New Jersey drinking and wastewater parameters. Certificate #E-148.

10. Kansas Department of Health and Environment. Approval to perform analyses on solid or hazardous waste samples based on California Physical Property Testing parameters. Certificate #E1122.

11. Minnesota Department of Health. No established certification program. Authorized for drinking water parameters based on New Jersey interim certification.

12. New Jersey Department of Environmental Protection. Certification #12257 for drinking water and water pollution and A-280 parameters.

13. New York Department of Environmental Conservation. Participant in Superfund program. Authorized for Purgeable and Extractable Organics; PCBs; Methods 601 and 602; and Inorganics.

14. New York Department of Public Health. Laboratory I.D. #10586 Certification for Potable, Non-Potable water, Solid and Hazardous Waste analysis.

15. Oklahoma Water Resources Board. Laboratory I.D. #8703.

16. Pennsylvania Department of Environmental Resources. Laboratory I.D. #68-323 for drinking water parameters, including: Trace Metals, Nitrate/Fluoride, Herbicides/ Pesticides, Trihalomethanes.

17. South Carolina Department of Health and Environmental Control. Laboratory I.D. #94002. Reciprocal with New Jersey parameters.

18. Tennessee Department of Health and Environment. Laboratory I.D. #00209. Reciprocal with New Jersey for drinking water parameters.

19. Utah Department of Health. Certificate #E-91 for Environmental Chemistry Parameters.

20. Virginia Department of General Services. Certification #00113. Reciprocal with New Jersey parameters.

21. Wisconsin Department of Natural Resources. Lab I.D. #4810 for drinking and wastewater parameters: Organics, Inorganics and Dioxins.

22. Wyoming Water Quality Division. No established certification program. The State authorizes EPA certified laboratories to perform analyses.

23. USEPA participant in Superfund Contract Laboratory Program Inorganics, Organics and Dioxins. (CLP)

21.	880218	Dynamac	CLP Inorganics & Organics

ETC

May, 1988

The following list includes the On-Site External Audits performed at the ETC-Edison facility.

1.	860515	NJDEP	X-085 specific
2.	860807	CA	Haz-waste certification
3.	861209	UT	DOH-DW & WW certification
4.	861217	NJDEP	Lab cert-A-280, DW & WW
5.	870203	WMI	Laboratory audit
6.	870320	EPA II	IFB-TCDD
7.	870404	EPA V	WMI sites
8.	870421	PA	DER-DW certification
9.	870428	NY	DOH-DW & WW certification
10.	870400	Army Corps.	Engineers,Systems audit
11.	870415	NJDEP	X-085 & A-280
12.	870819	FL	DHRS-DW & WW certification
13.	871014	NJDEP	New CV parameters cert.
14.	871028	MKE/RMA	Systems audit
15.	871109	RMA/USATHAMA	QA protocol
16.	871112-14	WMI	Laboratory audit
17.	871116-17	WI	DW & WW certification
18.	871117-19	EPA IV	WMI, Dupont & Ciba Geigy sites
19.	871203	MKE	Systems & documentation
20.	880210	NJDEP	X-195 specific
21.	880218	Dynamac	CLP Inorganics & Organics
22.	880322	EPA II	CLP Dioxin & Organics
23.	880323-24	WMI	Follow-up audit
24.	880412	EPA IV	CLP Organics/Inorganics
25.	880413	NY	DOH-DW & WW certification
26.	880419	EPA V	Support for PRP-lead Site

SECTION 1

PERFORMANCE EVALUATION SAMPLES

RESULTS REPORTED FROM:

- SECOND QUARTER INORGANICS (CLP)
- SECOND QUARTER ORGANICS (CLP)
- NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
- PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C 20460

AUG 11 1986

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

Rec 9/2

MEMORANDUM

SUBJECT: State Requirements for Laboratory Support

FROM: Henry L. Longest II, Director
Office of Emergency and Remedial Response

TO: Regional Waste Management Division Directors
Regional Environmental Services Division Directors

It has been brought to my attention that an increasing number of States are linking their requirements for Superfund analytical laboratory support to requirements of the Contract Laboratory Program (CLP). In fact, some States are apparently requiring that laboratories must be active CLP participants in order to do analytical work for the State. A number of private laboratories are concerned about such State requirements, since they believe it raises issues of equity for laboratories who are not active in the CLP for reasons other than quality, e.g. limited bid awards due to EPA funding constraints, or other factors. Obviously, those labs feel that their markets may be limited if active CLP participation is a requirement for other business.

I believe the concerns that are being raised have merit. The CLP is not intended to be a lab certification program. There are certainly laboratories outside of the CLP capable of performing high quality analytic work. However, appropriate quality assurance oversight and quality control practices, such as those applied to CLP labs, should be required for any laboratory doing Superfund work.

I suggest that you raise this issue with the States in your respective Regions and point out to them the concerns that are raised if CLP participation by laboratories is a requirement for other work.

cc: CLP Laboratories

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY-LAS VEGAS
P.O. BOX 93478
LAS VEGAS, NEVADA 89193-3478
(702/798-2100 · FTS 545-2100)

ORIGINAL
(Red)

APR 1 1 1988

Diane Foster
Environmental Testing & Certification Corp.
284 Raritan Center Parkway
Edison, NJ 08818

Dear Ms. Foster:

For your information and review, enclosed are the results for your participation in the EMSL-LV Second Quarter Inorganic Performance Evaluation Study (QB2 FY-88). The samples were prepared by the EMSL-LV and consisted of one soil sample and two water samples. The homogeneous soil sample and one of the water samples were spiked with inorganic parameters. The other water sample was a blank. The samples were to be prepared and analyzed by current IFB procedures as per contract. All laboratories received the samples single blind. Enclosed is general information about the Superfund Performance Evaluation Program which explains the new PE portion of the Laboratory Profile Package, called the "Individual Laboratory Summary Report" (ILSR).

The EMSL-LV thanks you for your participation in this study. We trust that this information is vital to you as a member of the community of laboratories analyzing hazardous waste samples for Superfund.

Sincerely,

Larry Butler, Ph.D.
Supervisor, Performance Evaluation Program
Quality Assurance Research Branch
Quality Assurance and Methods Development Division

Enclosure

cc: (w/enclosure)
Carla Dempsey, OERR
William Langley, OERR

Enclosure 1A

The EMSL-LV is adhering to the National Program Office guidelines with the following requirement. For each parameter which you failed to correctly identify or quantitate or which you reported as a false positive (parameters not added into this PE sample, but found by your laboratory at concentrations exceeding contract requirements), please document in a letter to your Project Officer, Deputy Project Officer and myself within two weeks of receipt of this letter, the source of the problem(s) and the corrective action(s) taken to prevent the problem from occurring in future quarterly blind PE samples.

Details of the new scoring procedure are shown on the following "Attachment 1." For your convenience, included here is the Individual Laboratory Summary Report (ILSR) for your laboratory and a graphical programmatic summary of scores.

ATTACHMENT 1

The following information explains the details about the Individual Laboratory Summary Report, Program Summary Report, Summary of Laboratory Scores, and specific information about the scoring procedures.

The Scoring Procedures

The confidence interval (CI) calculation and the scoring algorithm are the intrinsic parts of the Quarterly Blind (QB) study. At present, the 95 percent CI are calculated from CLP laboratory-submitted results. All reported results are compared to the CI. Elements that were found to be mis-identified, mis-quantitated and reported false positives are flagged and used in the calculation of the score. False positives are values at exceedingly high concentrations which can be caused by contamination or interference. In addition, matrix spike accuracy and duplicate precision are included in the scoring. Other details are explained in the footnotes which accompany the Individual Laboratory Summary Report.

Confidence intervals were calculated from the laboratory-submitted values using the statistical procedure Biweight which does not generate outliers. Instead, the laboratory-reported results are weighted relative to their position from the mean.

The following equation is used to calculate the percent score (% score) for each laboratory.

$$\%\ \text{Score} = 100 - (5A_w + B_w + 2C_w) - (5A_s^w + B_s^w + 2C_s^w) - 0.5S^s - D_s$$

where A = number of mis-identifications

$$B = \left[1 - \left[\frac{T - x}{T} \right]^{1.5} \right] * 50$$

T = total number of elements
x = number of mis-quantitations
C = number of false positives
S = number of matrix spikes outside the criteria
D = number of duplicates outside the criteria
w = water matrix
s = soil matrix

The Scoring Procedures (continues)

The following scoring categories are recommended by the Environmental Monitoring System Laboratory, Las Vegas (EMSL-LV) under the directive of the National Program Office:

1. 100 to 90 percent - Acceptable Performance, No Corrective Action Necessary

2. 90 to 75 percent - Acceptable Performance, Corrective Action Necessary

3. below 75 percent - Unacceptable Performance, Corrective Action Mandatory

A score below 75% results in the failure of a performance evaluation (PE) sample.

Individual Laboratory Summary Report

Header / Qualifier	Explanation
LABORATORY NAME	laboratory name and location (state) and assigned alpha-numeric code
PERFORMANCE LEVEL	laboratory performance falls into one of three (3) categories:
	ACCEPTABLE — % score greater than or equal to 90
	ACCEPTABLE - Corrective Action Necessary — % score greater than or equal to 75 and less than 90
	UNACCEPTABLE - Corrective Action Mandatory — % score is less than 75
LABORATORY RANK	comparison of CLP laboratories only for which a % score was calculated
	Above — number of laboratories whose % score is greater than the laboratory's % score
	Same — number of laboratories whose % score is the equal to the laboratory's % score
	Below — number of laboratories whose % score is less than the laboratory's % score
% SCORE	percent score calculated using the scoring equation
REPORT DATE	date that the Individual Laboratory Summary report is printed and in the format, month/day/year (for example, 1/23/88)
MATRIX	sample matrix (water or soil)

Individual Laboratory Summary Report (Continued)

Header / Qualifier	Explanation
ELEMENT NAME	the 23 target analytes required by the Statement of Work
95 % CI	95 percent confidence interval (CI) calculated for each element using the Biweight procedure with CLP laboratory-submitted results
LOWER	lower limit of CI
UPPER	upper limit of CI
LAB RESULTS	laboratory-reported values and qualifiers
REPORTED VALUE	laboratory-reported concentration
QUALIFIER CODE	laboratory-reported qualifier(s) pertaining to the preceding value
PROGRAM DATA	pertains to only CLP laboratory-submitted values
# LABS MIS-ID	number of CLP laboratories which mis-identified the element
# LABS MIS-QUAN	number of CLP laboratories which mis-quantitated the element
# LABS FALSE POS	number of CLP laboratories which reported the element at an exceedingly high concentration
TOTAL # LABS	number of CLP laboratories whose values were used in the statistical study of the program data

Individual Laboratory Summary Report (continued)

Header / Qualifier	Explanation
# OF ELEMENTS MIS-IDENTIFIED	number of elements mis-identified by the laboratory
# OF ELEMENTS MIS-QUANTIFIED	number of elements mis-quantitated by the laboratory
# OF FALSE POSITIVES	number of elements reported at an exceedingly high concentration by the laboratory

Program Summary Report

Header / Qualifier	Explanation
MATRIX	sample matrix (water or soil)
REPORT DATE	date that the Program Summary Report is printed and in the format, month/day/year (for example, 1/23/88)
ELEMENT DATA	element data generated with CLP laboratory-submitted results
ELEMENT NAME	the 23 elements required by the Statement of Work
SPIKE LEVEL	the level spiked into the sample
95 % CI	95 percent confidence interval (CI) calculated for each element using the Biweight procedure with CLP laboratory-submitted results
LOWER	lower limit of CI
UPPER	upper limit of CI
MEAN RESULT	average/mean of the values used in the calculation of the CI
STANDARD DEVIATION	standard deviation of the values used in the calculation of the CI
PROGRAM DATA	pertains to only CLP laboratory-submitted values
# LABS MIS-ID	number of CLP laboratories which mis-identified the element
# LABS MIS-QUAN	number of CLP laboratories which mis-quantitated the element
# LABS FALSE POS	number of CLP laboratories which reported the element at an exceedingly high concentration
TOTAL # LABS	number of CLP laboratories whose values were used in the statistical study of the program data

ORIGINAL

Program Summary Report (continues)

Header / Qualifier	Explanation
# OF LABS WITH ACCEPTABLE PERFORMANCE	number of CLP laboratories whose % score is greater than or equal to 90
# OF LABS WITH ACCEPTABLE PERFORMANCE - CORRECTIVE ACTION NECESSARY	number of CLP laboratories whose % score is greater than or equal to 75 and less than 90
# OF LABS WITH UNACCEPTABLE PERFORMANCE - CORRECTIVE ACTION MANDATORY	number of CLP laboratories whose % score is less than 75

Summary of Laboratory Scores

Header / Qualifier	Explanation
LAB NAME	SMO assigned laboratory lab code
CODE	assigned alpha-numeric laboratory code
SCORE	% score calculated for each laboratory
MIS-ID	number of elements mis-identified (the "A" in the % Score equation)
MIS-QUANT	number of elements mis-quantified (the "B" in the % Score equation)
FALSE POS	number of false positives reported (the "C" in the % Score equation)
MSPK OUT	number of matrix spike recoveries outside the criteria (the "S" in the % Score equation)
DUP OUT	number of duplicates (RPDs) outside the criteria (the "D" in the % Score equation)

INORGANIC PERFORMANCE EVALUATION SAMPLE
INDIVIDUAL LABORATORY SUMMARY REPORT
FOR QR 2 FY 88

LABORATORY NAME: Env. Testing & Certif. (NJ) (P2)
PERFORMANCE LEVEL: ACCEPTABLE
LABORATORY RANK: Above = 5 Same = 1 Below = 24

% Score: 96.6
REPORT DATE: 3/23/1988
MATRIX: SOIL

ELEMENT NAME	95 % CI LOWER	95 % CI UPPER	LAB RESULTS REPORTED VALUE	LAB RESULTS QUALIFIER CODE	PROGRAM DATA #LABS MIS ID	#LABS MIS-QUANT	#LABS FALSE POS	#LABS MSPK OUT	#LABS DUP OUT	TOTAL #LABS
ALUMINUM	4790	11900	9660		0	2	0	0	0	31
ANTIMONY	0	53	23		3	3	0	20	0	31
ARSENIC	17	28	25		0	4	0	7	1	31
BARIUM	156	189	179		0	3	0	1	0	31
BERYLLIUM	16	21	18		0	0	0	1	0	31
CADMIUM	9.7	17	13		0	0	0	1	0	31
CALCIUM	75301	104001	93000		0	2	0	0	0	31
CHROMIUM	16	51	42		0	2	0	8	0	31
COBALT	71	92	79		0	1	0	0	0	31
COPPER	88	112	99		0	3	0	1	0	31
IRON	12600	17400	17200	*	0	3	0	0	0	31
LEAD	164	226	186		0	4	0	2	0	31
MAGNESIUM	40801	57101	52900		0	2	0	0	0	
MANGANESE	2810	3530	3570	X	0	7	0	1	0	
MERCURY	12	24	15		0	3	0	2	1	31
NICKEL	26	54	43		0	2	0	3	0	31
POTASSIUM	0	1970	1586		0	4	0	0	0	31
SELENIUM	6.5	20	14		0	3	0	4	4	31
SILVER	33	52	46		0	3	0	5	1	31
SODIUM	d	d	282		0	0	0	0	0	31
THALLIUM	19	43	31		0	0	0	6	2	31
VANADIUM	41	70	59		0	1	0	0	0	31
ZINC	162	209	189		0	2	0	2	0	31

OF ELEMENTS NOT IDENTIFIED: 0
OF ELEMENTS MISQUANTIFIED: 1
OF FALSE POSITIVES: 0

OF DUPLICATES OUT: 0
WATER :
SOIL :

OF MATRIX SPIKES OUT: 0
WATER :
SOIL :

AR300678

INORGANIC PERFORMANCE EVALUATION SAMPLE
INDIVIDUAL LABORATORY SUMMARY REPORT
FOR QB 2 FY 88

LABORATORY NAME: Env. Testing & Certif. (NJ) (P2)
PERFORMANCE LEVEL: ACCEPTABLE
LABORATORY RANK: Above = 5 Same = 1 Below = 24

% Score: 96.6
REPORT DATE: 3/23/1988
MATRIX: WATER

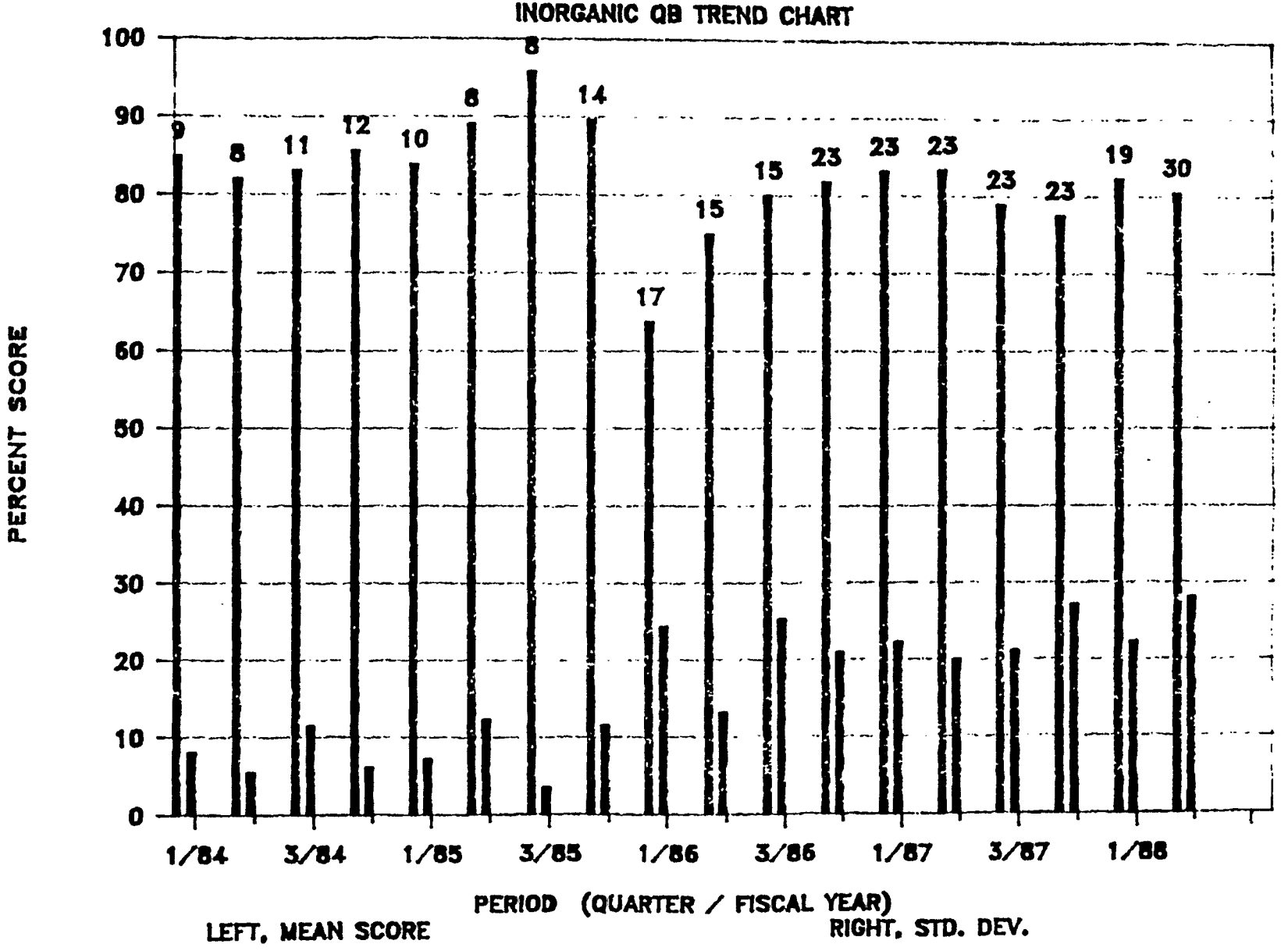
ELEMENT NAME	95 % CI LOWER	95 % CI UPPER	LAB RESULTS REPORTED VALUE	LAB RESULTS QUALIFIER CODE	PROGRAM DATA #LABS MIS ID	#LABS MIS-QUANT	#LABS FALSE POS	#LABS MSPK OUT	#LABS DUP OUT	TOTAL #LABS
ALUMINUM	2540	3300	2880		0	1	0	0	0	31
ANTIMONY	0	111	91		3	0	0	1	3	31
ARSENIC	68	106	88		0	1	0	0	0	31
BARIUM	372	450	407		0	4	0	0	1	31
BERYLLIUM	38	51	43		0	1	0	0	0	31
CADMIUM	19	32	26		0	0	0	0	1	31
CALCIUM	12300	15500	13500		0	2	0	0	0	31
CHROMIUM	14	40	27		0	0	0	0	1	31
COBALT	66	113	90		0	0	0	0	0	31
COPPER	180	244	204		0	2	0	1	2	31
IRON	355	442	396		0	4	0	0	0	31
LEAD	12	25	16		0	0	0	3	2	31
[illegible]ESIUM	7830	9600	8610		0	2	0	0	0	31
[illegible]ANESE	62	81	68		0	1	0	0	0	31
MERCURY	10	20	16		0	2	0	1	1	31
NICKEL	86	126	103		0	1	0	0	1	31
POTASSIUM	8810	12400	10200		0	2	0	0	0	31
SELENIUM	18	28	24		0	2	0	1	0	31
SILVER	c	c	7.2		0	0	0	5	0	31
SODIUM	6100	8320	6990		0	5	0	0	0	31
THALLIUM	51	88	68		0	1	0	7	1	31
VANADIUM	118	154	135		0	1	0	1	0	31
ZINC	47	66	58		0	5	0	1	2	31

OF ELEMENTS NOT IDENTIFIED: 0
OF ELEMENTS MISQUANTIFIED: 0
OF FALSE POSITIVES: 0

OF DUPLICATES OUT: 0
WATER :
SOIL :

OF MATRIX SPIKES OUT: 0
WATER :
[illegible] :

PERFORMANCE EVALUATION STUDIES



b CONFIDENCE INTERVALS (CI) WERE DERIVED FROM LABORATORY SUBMITTED VALUES. LESS THAN VALUES (<x), U-VALUES, AND NON-SUBMITTED VALUES (-) WERE NOT USED IN THE CALCULATION OF THE CI.
c CI WERE NOT SET SINCE 40 % OR MORE OF THE LABORATORIES SUBMITTED A NON-USABLE VALUE.
d CI NOT USED. SEE SCORING NOTES, PROCEDURE FOR GRADING U-VALUES NO. 4.
B INDICATES AN ESTIMATED VALUE LESS THAN THE CRDL. SAME AS (-FLAG.
D INDICATES A DILUTION.
E INDICATES A VALUE ESTIMATED OR NOT REPORTED DUE TO THE PRESENCE OF INTERFERENCES.
S INDICATES VALUE DETERMINED BY THE METHOD OF STANDARD ADDITION.
NR NOT REQUIRED.
U ANALYZED FOR BUT NOT DETECTED.
X VALUE WAS OUTSIDE BOTH THE WARNING AND THE ACTION LIMIT. POINTS DEDUCTED.
W VALUE WAS OUTSIDE THE WARNING LIMIT ONLY. NO POINTS DEDUCTED.
- VALUE NOT SUBMITTED FOR THIS PARAMETER.
* INDICATES A FALSE POSITIVE BY DIXON'S TEST. POINTS DEDUCTED.
? BEST ESTIMATE OF VALUE AND/OR QUALIFIER. POOR COPY AND/OR ILLEGIBLE VALUE SUBMITTED.
< INDICATES A VALUE LESS THAN THE CRDL OR THE INSTRUMENT DETECTION LIMIT.
(B) INDICATES AN ESTIMATED VALUE LESS THAN THE CRDL. SAME AS B-FLAG.
(B) INDICATES AN ESTIMATED VALUE LESS THAN THE CRDL. SAME AS B-FLAG.
D2 THE SAMPLE WAS DILUTED BY A FACTOR OF 2.
D4 THE SAMPLE WAS DILUTED BY A FACTOR OF 4.
D10 THE SAMPLE WAS DILUTED BY A FACTOR OF 10.
D20 THE SAMPLE WAS DILUTED BY A FACTOR OF 20.
D40 THE SAMPLE WAS DILUTED BY A FACTOR OF 40.
D50 THE SAMPLE WAS DILUTED BY A FACTOR OF 50.
W WARNING LIMIT (90 PERCENT CI).
W WARNING LIMIT (95 PERCENT CI).

SCORING NOTES: PROCEDURE FOR GRADING U-VALUES

1. ANY U-VALUE RESPONSE (INSTRUMENT DETECTION LIMIT) > CRDL FOR THE APPROPRIATE DILUTION, EVEN IF IT IS IN THE 95 % CI, CAUSES A POINT DEDUCTION. IF 25 % OR MORE OF THE LABORATORIES REPORT A U-VALUE OVER THE CRDL, NO POINTS ARE DEDUCTED FOR ANY LABORATORY, POSSIBLY INDICATING A MATRIX INTERFERENCE IN THE SAMPLE.

2. IF CRDL < LOWER CI, THEN USE CI AS SET.

3. IF LOWER CI < CRDL AND CRDL < UPPER CI, THEN SET LOWER CI TO ZERO (0).
NO POINTS DEDUCTED FOR IDENTIFICATION OR QUANTITATION LESS THAN OR EQUAL TO THE CRDL.

4. IF CRDL > LOWER AND UPPER CI, THEN NO CI USED. PARAMETER DROPPED FROM THE SCORING.
NO POINTS DEDUCTED FOR IDENTIFICATIONS OR QUANTITATIONS.
FALSE POSITIVES POSSIBLE.

NOTE THAT ONLY CLP LABORATORIES WERE USED IN THE CALCULATION OF THE CI.

NOTE THAT A U-VALUE FOLLOWED BY X (U X) MEANS THAT POINTS WERE LOST FOR IDENTIFICATION AND QUANTITATION.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY-LAS VEGAS
P O BOX 93478
LAS VEGAS NEVADA 89193-3478
(702/798-2100 · FTS 545-2100)

ORIGINAL (Red)

Mr. Jack Farrell
Environmental Testing
and Certif. Corporation
284 Raritan Center Parkway
Edison, NJ 08818

Dear Mr. Ferrell:

For your information and review the results for your participation in the EMSL-LV Second Quarter Organic Performance Evaluation Study (QB2, FY 88) are included here. Enclosed is general information about the Superfund Performance Evaluation Program. The PE portion of the Laboratory Profile Package, called the "Individual Laboratory Summary Report" (ILSR) was described in your letter reports last quarter. Other general information about the PE program is explained on the following pages.

The samples consisted of aqueous materials spiked with Target Compound List (TCL) and non-TCL pollutants at environmentally representative levels. Samples for all laboratories were from the same homogeneous batch. Each sample set was to be prepared and analyzed by current contractually required procedures.

The EMSL-LV thanks you for your participation in this study and wishes to congratulate the laboratories for an overall fine performance. We trust that this information is vital to you as a member of the community of laboratories analyzing hazardous waste samples for Superfund.

Sincerely,

Larry Butler, Ph.D.
Supervisor, Performance Evaluation Program
Quality Assurance Research Branch
Quality Assurance and Methods Development Division

Enclosure

cc: (w/enclosure)
Carla Dempsey, OERR
Joan Fisk, OERR
Emile Boulos, OERR
Angelo Carasea, OERR
Howard Fribush, OERR

Enclosure

The sample set consisted of aqueous materials spiked with base/neutral/acid/pesticide (BNAP) Target Compound List (TCL) and non-TCL compounds diluted in water to environmentally representative levels (full-volume organics). This included three (3) 80-ounce bottles of semi-volatiles and pesticides; one (1) 80-ounce bottle filled with blank water for BNAP blank analyses; four (4) 40-mL vials filled with water spiked with volatile organics; and two (2) 40-mL vials filled with blank water for volatiles blank analysis. The sample set was to be prepared and analyzed by current contractually required procedures.

All analytical results, calibrations, quality control procedures, and reporting and deliverable requirements were to be submitted by the participating laboratories by contract as a regular case.

EMSL-LV PE Reports - The entire format for EMSL-LV PE reports has been revised. Identification, Quantification, and Contamination (formerly called false positives) are now scored by by an algorithm contained in your laboratory's "Individual Laboratory Summary Report" (ILSR).

Confidence Intervals (CI) were derived from the laboratory submitted values using the statistical procedure BIWEIGHT which does not generate outliers. Instead values are weighted as to their position, relative to the mean. No values are discarded. Other details are included in your ILSR. The confidence interval calculation and the scoring algorithm are intrinsic parts of the ILSRs.

Also in the footnotes to the study is the EMSL-LV method for the scoring of U-flagged values. This U-value scoring procedure has not changed from earlier PE studies.

For your convenience, attached are the ILSR for your laboratory, footnotes, and a graphical programmatic representation of scores. The bar graph shows the mean laboratory performance plotted versus time. The left bar for each quarter represents the mean score, whereas the right bar for the same quarter is the standard deviation of the scores. The numbers on top of the left bar are the numbers of laboratories in each study. Please compare your score with the programmatic mean.

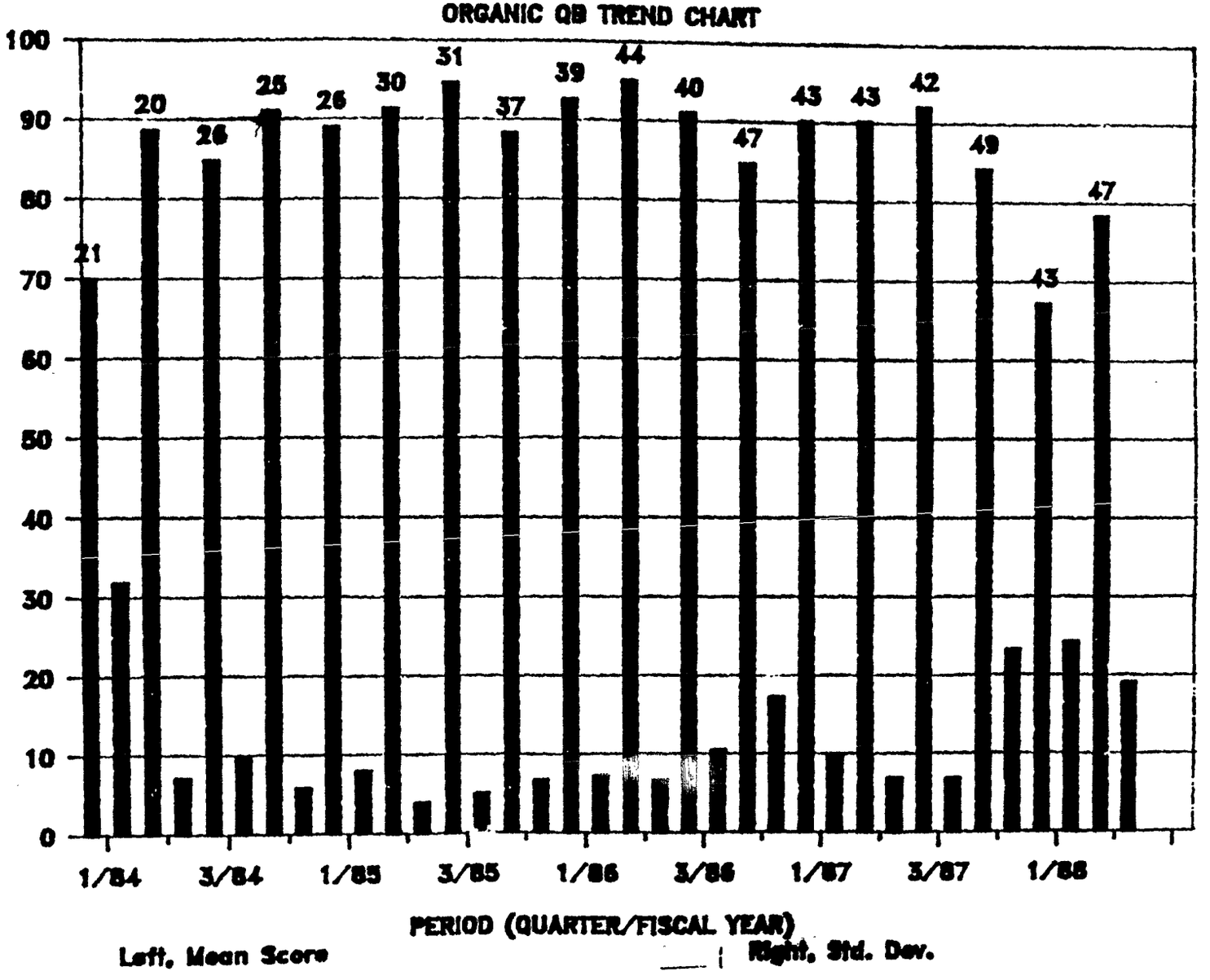
The EMSL-LV is recommending the following scoring categories, which are a National Program Office directive:

1. 100 to 90 percent - "Acceptable Performance, No corrective action necessary;"
2. 90 to 70 percent - "Acceptable Performance, Corrective Action Necessary;"
3. 70 percent or lower - "Unacceptable Performance, Corrective Action Mandatory."

The Analytical Operations Branch of the Office of Emergency and Remedial Response also requires that all laboratories who fail to correctly identify or quantify two or more parameters or compounds or who have blank contamination (false positives) exceeding the contract requirements document the corrective action they plan to undertake. These laboratories must document in a letter to their Project Officer, Deputy Project Officer, and myself within two weeks of receipt of the results of this study, the source of the problem(s) and the corrective action(s) the laboratory plans to implement to prevent the problem(s) from occurring in future Quarterly Blind PE samples.

The government reserves the right to fairly and equably adjust scores for any PE study, should the National Program Office determine that there were unusual problems with the PE samples themselves or the scoring procedure. Determinations made by the National Program Office are final.

CONTRACT LABORATORY PROGRAM



ORGANIC PERFORMANCE EVALUATION SAMPLE
INDIVIDUAL LABORATORY SUMMARY REPORT
FOR QB 2 FY 88

LABORATORY: Env. Testing & Certif. (NJ)
PERFORMANCE: ACCEPTABLE - Corrective Actions Necessary
RANK: Above = 13 Same = 2 Below = 35

% SCORE: 87.3
REPORT DATE: 4/1/1988
MATRIX: WATER

COMPOUND	90 % CI LOWER	90 % CI UPPER	LABORATORY DATA CONC	Q	%LABS NOT-ID	PROGRAM DATA %LABS MIS-QUANT	%LABS CONTAM	TOTAL %LABS
TCL VOLATILE								
BROMOMETHANE	64	240	110		0	2	0	50
METHYLENE CHLORIDE	c	c	120	B	0	0	0	50
1,1-DICHLOROETHANE	34	55	48		0	3	0	50
2-BUTANONE	38	170	110		3	7	0	50
BROMODICHLOROMETHANE	59	80	64		0	3	0	50
1,1,2-TRICHLOROETHANE	54	76	62		0	8	0	50
BENZENE	12	17	14		1	5	0	50
2-HEXANONE	48	200	120		1	3	0	50
TOLUENE	18	230	20		0	2	0	50
CHLOROBENZENE	85	110	89		0	3	0	50
STYRENE	80	110	84		0	6	0	50
XYLENES (TOTAL)	120	100	140		0	5	0	50
TCL SEMIVOLATILE								
2-CHLOROPHENOL	23	52	36		0	5	0	50
N-NITROSO-DI-N-PROPYLAMINE	45	84	63		0	6	0	50
ISOPHORONE	65	140	100		0	5	0	50
2,4-DIMETHYLPHENOL	10	53	28		0	2	0	50
BENZOIC ACID	50	200	40	J	0	7	0	50
HEXACHLOROBUTADIENE	61	160	110		0	2	0	50
2-METHYLNAPHTHALENE	20	55	36		0	3	0	50
2,4,6-TRICHLOROPHENOL	55	100	84		0	8	0	50
2-NITROANILINE	50	100	78	J	0	2	0	50
ACENAPHTHYLENE	59	100	81		0	8	0	50
ACENAPHTHENE	61	100	83		0	4	0	50
2,4-DINITROPHENOL	61	260	160		3	7	0	50
DIBENZOFURAN	96	160	150		0	6	0	50
4-NITROPHENOL	50	200	91	J	0	1	0	50
FLUORENE	64	100	84		0	4	0	50
DIETHYLPHTHALATE	c	c	26		0	0	0	50
PENTACHLOROPHENOL	74	230	210		0	6	0	50
PHENANTHRENE	62	100	86		0	5	0	50
ANTHRACENE	57	100	89		0	4	0	50
PYRENE	42	110	91		0	6	0	50
BUTYL BENZYL PHTHALATE	c	c	5	J	0	0	0	50
BENZO(A)ANTHRACENE	31	100	92		0	2	0	50
DI-N-OCTYL PHTHALATE	10	100	82		0	2	0	50
DIBENZ(A,H)ANTHRACENE	17	140	200	X	0	2	0	50
TCL PESTICIDES								
HEPTACHLOR	0.05	0.43	0.15		1	8	0	50
ALDRIN	0.13	0.53	0.38	C	19	5	0	50
ENDRIN	0.16	0.48	0.56	X	3	11	0	50
TOXAPHENE	c	c	5.9	U	0	0	1	50
NON-TCL SEMIVOLATILE								
BENZOPHENONE			150	J	0	0	0	50
DISULFOTON			45	J	0	0	0	50
CHLORPYRIFOS			30	J	0	0	0	50
2-NITRO-P-CRESOL			58	J	0	0	0	50
TCL VOLATILE (Contaminants)								
ACETONE			40	B	0	0	0	50

ORIGINAL (Blue)

ORGANIC PERFORMANCE EVALUATION SAMPLE
INDIVIDUAL LABORATORY SUMMARY REPORT
FOR QB 2 FY 88

LABORATORY: Env. Testing & Certif. (NJ)
PERFORMANCE: ACCEPTABLE - Corrective Actions Necessary
RANK: Above = 13 Same = 2 Below = 35

% SCORE: 87.5
REPORT DATE: 4/1/1988
MATRIX: WATER

COMPOUND	90 % CI LOWER	90 % CI UPPER	LABORATORY DATA CONC	Q	#LABS NOT-ID	#LABS MIS-QUANT	PROGRAM DATA #LABS CONTAM	TOTAL #LABS
TCL SEMIVOLATILE (Contaminants)								
BENZYL ALCOHOL			8	J	0	0	0	56
NON-TCL VOLATILE (Contaminants)								
HEXANE			10.2	JB	0	0	0	56
NON-TCL SEMIVOLATILE (Contaminants)								
UNKNOWN			30	BJ	0	0	18	56
UNKNOWN			23	JF	0	0	10	50
UNKNOWN			22	JF	0	0	4	56

OF TCL COMPOUNDS NOT-IDENTIFIED: 0
OF TCL COMPOUNDS MIS-QUANTIFIED: 2
OF TCL CONTAMINANTS: 0

OF NON-TCL COMPOUNDS NOT-IDENTIFIED: 0
OF NON-TCL CONTAMINANTS: 2

TCL:

b	CONFIDENCE INTERVALS (CI) WERE DERIVED FROM LABORATORY SUBMITTED VALUES. LESS THAN VALUES (<x), J-VALUES, U-VALUES, B-VALUES, AND NON-SUBMITTED VALUES (-) WERE NOT USED IN THE CALCULATION OF THE CI.
c	CI WERE NOT SET SINCE 40 % OR MORE OF THE LABORATORIES SUBMITTED A NON-USABLE VALUE.
B	INDICATES THAT THE COMPOUND WAS FOUND IN THE BLANK.
D	INDICATES A DILUTION.
E	COMPOUND EXCEEDS CALIBRATION RANGE OF INSTRUMENT.
J	ESTIMATED VALUE LESS THAN THE CROL.
NA	NOT APPLICABLE OR NOT ANALYZED FOR.
NR	NOT REQUIRED.
NS	NOT SUBMITTED.
U	ANALYZED FOR BUT NOT DETECTED.
X	VALUE WAS OUTSIDE BOTH THE WARNING AND THE ACTION LIMIT. POINTS DEDUCTED FOR QUANTITATION ONLY.
&	POINTS DEDUCTED FOR IDENTIFICATION ONLY.
$	VALUE WAS OUTSIDE THE WARNING LIMIT ONLY. NO POINTS DEDUCTED.
-	VALUE NOT SUBMITTED FOR THIS COMPOUND.
*	INDICATES A TCL CONTAMINANT DETERMINED BY GRUBB'S TEST FOR COMPOUNDS WITH NO CI SET BASED ON 'c' CRITERIA.
?	BEST ESTIMATE OF VALUE AND/OR QUALIFIER. POOR OR ILLEGIBLE COPY SUBMITTED.
@	WARNING LIMIT (80 PERCENT CI).
@@	ACTION LIMIT (90 PERCENT CI).

NON-TCL / TIC:

NA	NOT APPLICABLE. POINTS WERE NOT DEDUCTED SINCE 40 PERCENT OF THE LABORATORIES DID NOT IDENTIFY THIS COMPOUND.
-	NOT IDENTIFIED.
ND	NOT DETECTED. POINTS DEDUCTED.
F	INDICATES A CONTAMINANT. POINTS DEDUCTED.
X	INDICATES THAT THE DATA WERE MANUALLY MANIPULATED BY THE ANALYST.
A	ALDOL CONDENSATION PRODUCT.

SCORING NOTES: PROCEDURE FOR GRADING U-VALUES

1. ANY U-VALUE RESPONSE (LABORATORY DETECTION LIMIT) > CROL, EVEN IF IT IS IN THE 90 % CI, CAUSES A POINT DEDUCTION. IF 25 % OR MORE OF THE LABORATORIES REPORT A U-VALUE OVER THE CROL, THEN NO POINTS ARE DEDUCTED FOR ANY LABORATORY. THIS COULD INDICATE A MATRIX INTERFERENCE IN THE SAMPLE.

2. IF CROL < LOWER CI, THEN USE CI AS SET.

3. IF LOWER CI < CROL AND CROL < UPPER CI, THEN SET LOWER CI TO ZERO (0). NO POINTS DEDUCTED FOR IDENTIFICATION OR QUANTITATION LESS THAN OR EQUAL TO THE CRDL.

4. IF CROL > LOWER AND UPPER CI, THEN NO CI USED. ANALYTE DROPPED FROM THE SCORING. NO POINTS DEDUCTED FOR IDENTIFICATIONS OR QUANTITATIONS. CONTAMINANTS POSSIBLE.

NOTE THAT ONLY CLP LABORATORIES WERE USED IN THE CALCULATION OF THE CI.

NOTE THAT A U-VALUE FOLLOWED BY AN AMPERSAND (&) (U &) MEANS THAT POINTS WERE LOST FOR IDENTIFICATION ONLY.

NOTE THAT FOR NON-TCL/TIC A DASH FOLLOWED BY A "ND" (- ND) INDICATES THAT POINTS WERE DEDUCTED FOR IDENTIFICATION ONLY.

(6)

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Let's protect our earth

Certifies That

ENVIRONMENTAL TESTING & CERTIFICATION CORPORATION
284 Raritan Center Parkway
Edison, NJ 08837

having duly met the requirements of the

Regulations Governing Laboratory Certification
And Standards Of Performance N.J.A.C. 7:18 et. seq.

is hereby approved as a

State Certified Water Laboratory

To perform the analyses as indicated on the Annual Certified Parameter List
which must accompany this certificate to be valid

11257
PERMANENT CERTIFICATION NUMBER

July 8, 1982
DATE

COMMISSIONER
DEPARTMENT OF ENVIRONMENTAL PROTECTION

This certification is subject to unannounced laboratory inspections as specified by N.J.A.C. 7:18-2.11(d) and agreed to by the Laboratory Manager on filing the application

TO BE CONSPICUOUSLY DISPLAYED AT THE LABORATORY WITH THE ANNUAL CERTIFIED PARAMETER LIST.

AR300689

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF FINANCIAL MANAGEMENT, PLANNING & GENERAL SERVICES
CN 402
TRENTON, N.J. 08625

January 21, 1988

Environmental Testing & Certification Corp.
284 Raritan Center Parkway
Edison, NJ 08837

Lab ID# 12257

Dear Dr. Fitzgerald:

Enclosed is your 1987-88 Annual Certified Parameter List. This list replaces the 1986-87 form and must be conspicuously displayed with the permanent certificate at the laboratory.

Your cooperation in this matter is appreciated.

Sincerely,

Maria Salamandra

Maria Salamandra, Chief
Bureau of Collections, Licensing
and Management Services

MS/DP/ch

Enclosure
cc: Jerry Bundy

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF QUALITY ASSURANCE
ANNUAL CERTIFIED PARAMETER LIST FOR 1987-1988

ORIGINAL

ENVIRONMENTAL TESTING AND CERTIFICATION CORP (12257) IS CERTIFIED TO PERFORM THE ANALYSES BELOW UNTIL JUNE 30 1988.

DRINKING WATER LABORATORY CERTIFICATION

LIMITED CHEMISTRY

- 934 NITRATE, AUTO CD REDUC
- 937 FLUORIDE-AUTO ALIZ FL BLU
- 945 TURBIDITY
- 971 PH, GLASS ELECTRODE
- 956 SULFATE, GRAVIM OR TURBID

ATOMIC ABSORPTION

- 901 BA, ATOMIC ABSORPTION
- 902 AG, ATOMIC ABSORPTION
- 903 CU, ATOMIC ABSORPTION
- 904 FE, ATOMIC ABSORPTION
- 906 ZN, ATOMIC ABSORPTION
- 912 HG,MANUAL COLD VAPOR
- 914 AS, GRAPHITE FURNACE
- 915 BA, GRAPHITE FURNACE
- 916 CD, GRAPHITE FURNACE
- 917 CR, GRAPHITE FURNACE

LAB 12257
01/07/88

DRINKING WATER LABORATORY CERTIFICATION

ATOMIC ABSORPTION

- 918 PB, GRAPHITE FURNACE
- 920 SE, GRAPHITE FURNACE
- 924 MN, GRAPHITE FURNACE
- 954 NA, ATOMIC ABSORPTION

GAS CHROMATOGRAPHY

- 601 PURGEABLE HALOCARBONS
  - 2984 TRICHLOROETHENE
  - 2987 TETRACHLOROETHENE
  - 2982 CARBON TETRACHLORIDE
  - 2981 1,1,1-TRICHLOROETHANE
  - 2980 1,2,-DICHLOROETHANE
  - 2976 VINYL CHLORIDE
  - 2964 METHYLENE CHLORIDE
  - 2977 1,1-DICHLOROETHENE
  - 2382 TRANS-1,2-DICHLOROETHENE
  - 2988 CHLOROBENZENE
  - 2406 1,2-DICHLOROBENZENE
  - 2402 1,3-DICHLOROBENZENE
  - 2404 1,4-DICHLOROBENZENE
- 602 PURGEABLE AROMATICS
  - 2990 BENZENE
  - 2988 CHLOROBENZENE
  - 2406 1,2-DICHLOROBENZENE
  - 2402 1,3-DICHLOROBENZENE
  - 2404 1,4-DICHLOROBENZENE
  - 2384 ORTHO-XYLENE
  - 2995 META-XYLENE
  - 2386 PARA-XYLENE
- 608 ORGANOCHLORINE PEST & PCB
  - 2959 CHLORDANE
  - 2388 AROCHLOR 1016
  - 2390 AROCHLOR 1221
  - 2392 AROCHLOR 1232
  - 2394 AROCHLOR 1242
  - 2396 AROCHLOR 1248
  - 2398 AROCHLOR 1254
  - 2400 AROCHLOR 1260

DRINKING WATER LABORATORY CERTIFICATION

GAS CHROMATOGRAPHY

524 PURGEABLES
- 2984 TRICHLOROETHENE
- 2987 TETRACHLOROETHENE
- 2982 CARBON TETRACHLORIDE
- 2981 1,1,1-TRICHLOROETHANE
- 2980 1,2-DICHLOROETHANE
- 2976 VINYL CHLORIDE
- 2964 METHYLENE CHLORIDE
- 2977 1,1-DICHLOROETHENE
- 2382 TRANS-1,2-DICHLOROETHENE
- 2990 BENZENE
- 2989 CHLOROBENZENE

625 BASE/NEUTRALS AND ACIDS
- 2406 1,2-DICHLOROBENZENE
- 2402 1,3-DICHLOROBENZENE
- 2404 1,4-DICHLOROBENZENE
- 2338 AROCHLOR 1016
- 2390 AROCHLOR 1221
- 2392 AROCHLOR 1232
- 2394 AROCHLOR 1242
- 2396 AROCHLOR 1248
- 2398 AROCHLOR 1254
- 2400 AROCHLOR 1260
- 2959 CHLORDANE
- 2378 1,2,4-TRICHLOROBENZENE
- 2384 ORTHO-XYLENE
- 2995 META-XYLENE
- 2386 PARA-XYLENE

941 ORGANOCHLORINE PESTICIDES
- ENDRIN
- LINDANE
- METHOXYCHLOR
- TOXAPHENE

942 CHLOROPHENOXY ACID HERB
- 2,4-D
- 2,4,5-TP(SILVEX)

943 TRIHALOMETHANES
- CHLOROFORM
- BROMOFORM
- BROMODICHLOROMETHANE
- DIBROMOCHLOROMETHANE

WATER POLLUTION LABORATORY CERTIFICATION

LIMITED CHEMISTRY

00076 TURBIDITY

LAB 12257
01/07/88

AR300693

WATER POLLUTION LABORATORY CERTIFICATION

ORIGINAL

LIMITED CHEMISTRY

00095 SPECIFIC CONDUCTANCE

00340 COD

00400 HYDROGEN ION-PH

00410 ALKALINITY

00500 TOT SOLIDS

00530 SUSP SOLIDS

00556 OIL AND GREASE

00615 NITRITE

00630 NITRATE

00680 ORGANIC CARBON, TOTAL

00720 CYANIDE, TOTAL

00940 CHLORIDE

00945 SULFATE

00951 FLUORIDE, TOTAL

32730 PHENOLS

ATOMIC ABSORPTION

00915 CA, DISS

00916 CA, TOTAL

00925 MG, DISS

00927 MG, TOTAL

00929 NA, TOTAL

LAB 12257
01/07/88

WATER POLLUTION LABORATORY CERTIFICATION

ATOMIC ABSORPTION

ORIGINAL

(Req)

00930 NA, DISS

00935 K, DISS

00937 K, TOTAL

01000 AS, DISS

01002 AS, TOTAL

01005 BA, DISS

01007 BA, TOTAL

01010 BE, DISS

01012 BE, TOTAL

01025 CD, DISS

01027 CD, TOTAL

01030 CR, DISS

01032 CR HEX

01034 CR, TOTAL

01035 CO, DISS

01037 CO, TOTAL

01040 CU, DISS

01042 CU, TOTAL

01045 FE, TOTAL

01046 FE, DISS

01049 PB, DISS

01051 PB, TOTAL

LAB 12257
01/07/88

AR300695

WATER POLLUTION LABORATORY CERTIFICATION

ATOMIC ABSORPTION

(Rec)

01055 MN, TOTAL

01056 MN, DISS

01057 TL, DISS

01059 TL, TOTAL

01060 MO, DISS

01062 MO, TOTAL

01065 NI, DISS

01067 NI, TOTAL

01075 AG, DISS

01077 AG, TOTAL

01085 V, DISS

01087 V, TOTAL

01090 ZN, DISS

01092 ZN, TOTAL

01095 SB, DISS

01097 SB, TOTAL

01100 SN, DISS

01102 SN, TOTAL

01105 AL, TOTAL

01106 AL, DISS

01145 SE, DISS

01147 SE, TOTAL

LAB 12257
01/07/88

WATER POLLUTION LABORATORY CERTIFICATION

ORIGINAL
(Red)

ATOMIC ABSORPTION

01150 TI, DISS

01152 TI, TOTAL

01220 CR HEX, DISS

71890 HG, DISS

71900 HG, TOTAL

GAS CHROMATOGRAPHY

09032 PENTACHLOROPHENOL

39007 PESTICIDES
- 39330 ALDRIN
- 39380 DIELDRIN
- 39360 DDD
- 39365 DDE
- 39370DDT
- 39410 HEPTACHLOR
- 39350 CHLORDANE

THIS LIST MUST BE CONSPICUOUSLY DISPLAYED WITH THE PERMANENT CERTIFICATE AT THE LABORATORY

ER-LAB 16

DEPARTMENT OF ENVIRONMENTAL RESOURCES

OFFICE OF ENVIRONMENTAL PROTECTION *BUREAU OF LABORATORIES*

COMMONWEALTH OF PENNSYLVANIA

Certifies that

E. T. C. Corp.
284 Raritan Center Parkway
Edison, NJ 08818-7808
I. D. # 68-323

having duly met the requirements of
Chapter 109, Subchapter H, Safe Drinking Water Rules and Regulations
issued under the Pennsylvania Safe Drinking Water Act of May 1, 1984
(P L. 206, No. 43), (35 P.S. SS 721. 1-721.17)
is hereby appoved as a

Certified Drinking Water Laboratory

To perform the following analyses:

inorganic
Trace Metals, Nitrate/Fluoride

Organic
Herbicides/Pesticides, Volatile Organic Chemicals (Group 1 & 2)

Expiration Date: 7/1/89

AR300698

Certificate not transferable
Surrender upon revocation
To Be Conspicuously Displayed at the Laboratory

Mark M. McClellan
Deputy Secretary for Environmental Protection

E87074
Env Testing & Cert. Corp.
P.O. Box 7808
Edison NJ 08818-7808

JATION REPORT DATE: 11/17/

F NUMBER WP019

.ABORATORY: NJ136

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
TRACE METALS IN MICROGRAMS PER LITER:						
ALUMINUM	1	89.1	78.0	49.5- 148.	62.0- 136.	ACCEPTABLE
	2	877	858	658.-1050.	707.- 997.	ACCEPTABLE
ARSENIC	1	29.1	26.0	17.3- 34.1	19.6- 32.0	ACCEPTABLE
	2	141	130	95.3- 161.	104.- 153.	ACCEPTABLE
BERYLLIUM	1	87.5	89.9	75.7- 103.	79.2- 99.6	ACCEPTABLE
	2	266	270	231.- 306.	241.- 296.	ACCEPTABLE
CADMIUM	1	10.2	10.0	7.22- 12.8	7.92- 12.1	ACCEPTABL
	2	152	150	128.- 170.	133.- 165.	ACCEPTABL
COBALT	1	51.0	47.5	37.0- 57.4	39.6- 54.8	ACCEPTABL
	2	614	594	506.- 694.	530.- 670.	ACCEPT
CHROMIUM	1	15.4	15.0	8.74- 20.2	10.2- 18.8	ACCEPTABL
	2	248	240	181.- 287.	194.- 274.	ACCEPTABL
COPPER	1	41.0	40.0	31.6- 47.6	33.6- 45.6	ACCEPTABL
	2	178	176	152.- 195.	157.- 190.	ACCEPTABL
IRON	1	53.0	50.4	30.4- 70.0	35.3- 65.1	ACCEPTABL
	2	478	420	357.- 471.	371.- 457.	NOT ACCEPTABL
MERCURY	1	2.51	2.40	1.52- 3.21	1.73- 3.00	ACCEPTABL
	2	15.4	15.6	11.6- 20.1	12.7- 19.0	ACCEPTABL
MANGANESE	1	39.0	37.8	27.8- 46.1	30.1- 43.8	ACCEPTABL
	2	152	147	127.- 164.	132.- 159.	ACCEPTABL
NICKEL	1	66.5	63.0	46.9- 78.8	50.9- 74.8	ACCEPTABL
	2	294	280	237.- 322.	248.- 311.	ACCEPTABL
LEAD	1	51.9	50.4	37.2- 64.4	40.6- 61.0	ACCEPTAB
	2	179	168	140.- 197.	147.- 190.	ACCEPTAB

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY

PERFORMANCE EVALUATION REPORT DATE: 11/17/87

WATER POLLUTION STUDY NUMBER WP019

LABORATORY: NJ136

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
TRACE METALS IN MICROGRAMS PER LITER:						
SELENIUM	1	20.7	20.0	12.4- 25.8	14.0- 24.1	ACCEPTABLE
	2	120	120	84.2- 150.	92.4- 141.	ACCEPTABLE
VANADIUM	1	64.3	62.0	46.1- 78.4	50.5- 74.0	ACCEPTABLE
	2	645	620	520.- 720.	547.- 693.	ACCEPTABLE
ZINC	1	30.6	30.4	22.7- 38.8	24.7- 36.8	ACCEPTABLE
	2	116	114	90.7- 134.	96.1- 129.	ACCEPTABLE
ANTIMONY	3	13.2	13.8	6.04- 22.6	8.22- 20.4	ACCEPTABLE
	4	37.8	37.3	21.6- 54.7	25.9- 50.4	ACCEPTABLE
BERYLLIUM	3	17.9	17.5	13.4- 21.5	14.4- 20.4	ACCEPTABLE
	4	3.60	3.43	2.13- 4.95	2.49- 4.60	ACCEPTABLE
THALLIUM	3	3.00	3.20	1.58- 4.82	2.01- 4.39	ACCEPTABLE
	4	27.9	32.0	21.1- 43.2	24.1- 40.2	ACCEPTABLE
MOLYBDENUM	3	4.30	4.40	.352- 8.85	1.52- 7.68	ACCEPTABLE
	4	38.0	37.0	19.3- 49.3	23.2- 45.4	ACCEPTABLE
STRONTIUM	3	85.0	91.5	73.7- 107.	78.3- 102.	ACCEPTABLE
	4	18.0	18.3	14.3- 22.2	15.4- 21.1	ACCEPTABLE
TITANIUM	3	39.0	37.1	19.0- 52.2	23.6- 47.6	ACCEPTABLE
	4	156	156	113.- 205.	125.- 192.	ACCEPTABLE
MINERALS IN MILLIGRAMS PER LITER: (EXCEPT AS NOTED)						
PH-UNITS	3	4.00	4.00	3.93- 4.09	3.95- 4.07	ACCEPTABLE
	4	9.10	9.19	8.86- 9.40	8.93- 9.33	ACCEPTABLE
SPEC. COND. (UMHOS/CM AT 25 C)	1	660	659	592.- 732.	610.- 714.	ACCEPTABLE
	2	274	272	245.- 302.	252.- 295.	ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

ORIGINAL
(Red)

PERFORMANCE EVALUATION REPORT DATE: 11/17/8

WATER POLLUTION STUDY NUMBER WP019

BORATORY: NJ136

IALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
MINERALS IN MILLIGRAMS PER LITER: (EXCEPT AS NOTED)						
DS AT 180 C	1	409	399	325.- 482.	344.- 462.	ACCEPTABLE
	2	146	158	95.9- 217.	111.- 202.	ACCEPTABLE
ALCIUM	1	66.2	63.0	54.7- 74.0	57.1- 71.6	ACCEPTABLE
	2	1.16	0.905	.700- 1.78	.835- 1.65	ACCEPTABLE
AGNESIUM	1	0.515	0.520	.424- .635	.451- .608	ACCEPTABLE
	2	18.4	17.3	14.8- 19.8	15.4- 19.2	ACCEPTABLE
ODIUM	1	52.3	52.6	46.0- 58.4	47.5- 56.8	ACCEPTABLE
	2	13.4	13.7	10.8- 16.2	11.4- 15.6	ACCEPTABLE
OTASSIUM	1	20.4	18.0	14.9- 21.0	15.6- 20.2	CHECK FOR E
	2	11.3	10.0	8.29- 11.5	8.68- 11.1	CHECK FOR E
OTAL ALKALINITY	1	60.4	55.0	49.0- 60.4	50.4- 59.0	CHECK FOR ERROR
AS CACO3)	2	10.0	7.49	4.71- 11.6	5.57- 10.5	ACCEPTABLE
HLORIDE	1	123	113	106.- 128.	108.- 125.	ACCEPTABLE
	2	53.3	52.1	47.1- 57.1	48.3- 55.9	ACCEPTABLE
LUORIDE	1	2.01	2.01	1.74- 2.23	1.80- 2.17	ACCEPTABLE
	2	0.22	0.247	.155- .337	.178- .314	ACCEPTABLE
ULFATE	1	76.2	74.0	60.7- 85.5	63.8- 82.4	ACCEPTABLE
	2	27.8	33.0	24.5- 39.4	26.3- 37.5	ACCEPTABLE
NUTRIENTS IN MILLIGRAMS PER LITER:						
ITRATE-NITROGEN	1	0.478	0.500	.383- .614	.411- .586	ACCEPTABLE
	2	1.97	2.00	1.59- 2.38	1.68- 2.28	ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT DATE: 11/17/87

WATER POLLUTION STUDY NUMBER WP019

ABORATORY: NJ136

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
DEMANDS IN MILLIGRAMS PER LITER:						
COD	1	134	150	118.- 168.	124.- 162.	ACCEPTABL
	2	246	275	213.- 307.	225.- 295.	ACCEPTABL
TOC	1	57.3	59.2	46.8- 74.3	50.4- 70.7	ACCEPTABL
	2	109	109	86.8- 128.	92.2- 122.	ACCEPTABL
PCB'S IN MICROGRAMS PER LITER:						
PCB-AROCLOR 1016/1242	1	3.11	4.57	2.01- 6.61	2.60- 6.02	ACCEPTABL
PCB-AROCLOR 1262	2	1.89	1.86	1.18- 2.25	1.32- 2.11	ACCEPTABL
PESTICIDES IN MICROGRAMS PER LITER:						
ALDRIN	1	0.693	0.851	.225- 1.16	.344- 1.04	ACCEPTABL
	2	0.303	0.334	.0833- .460	.131- .412	ACCEPTABL
DIELDRIN	1	0.598	0.829	.453- 1.12	.538- 1.03	ACCEPTABL
	2	0.209	0.290	.134- .405	.168- .370	ACCEPTABL
DDD	1	0.325	0.390	.135- .565	.189- .511	ACCEPTABL
	2	0.820	0.975	.419- 1.31	.533- 1.20	ACCEPTABL
DDE	1	0.412	0.676	.285- .920	.365- .840	ACCEPTABL
	2	0.135	0.169	.0926- .255	.113- .234	ACCEPTABL
DDT	1	0.319	0.297	.0879- .477	.137- .428	ACCEPTABL
	2	0.709	0.742	.330- 1.07	.424- .973	ACCEPTABL
HEPTACHLOR	1	0.598	0.540	.203- .745	.272- .676	ACCEPTABL
	2	0.186	0.166	.0595- .239	.0824- .216	ACCEPTABL

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT DATE: 11/17/8

ORIGINAL (Red)

WATER POLLUTION STUDY NUMBER WP019

BORATORY: NJ136

ALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
PESTICIDES IN MICROGRAMS PER LITER:						
EPTACHLOR EPOXIDE	1	0.086	0.105	.0550- .144	.0664- .132	ACCEPTABLE
	2	0.390	0.456	.262- .603	.305- .560	ACCEPTABLE
HLORDANE	3	6.02	7.73	3.56- 9.39	4.31- 8.65	ACCEPTABLE
	4	0.629	0.620	.240- .919	.327- .833	ACCEPTABLE
VOLATILE HALOCARBONS IN MICROGRAMS PER LITER:						
,2 DICHLOROETHANE	1	61.9	54.8	37.3- 72.9	41.9- 68.3	ACCEPTABLE
	2	3.78	3.65	.694- 7.74	1.60- 6.83	ACCEPTABLE
HLOROFORM	1	101	92.9	52.8- 129.	62.6- 120.	ACCEPTABLE
	2	16.7	14.7	8.21- 21.7	9.93- 20.0	ACCEPTABLE
,1,1 TRICHLOROETHANE	1	42.0	32.6	18.4- 52.7	22.8- 48.3	ACCEPTA
	2	11.7	9.38	4.84- 15.5	6.20- 14.1	ACCEPTABLE
RICHLOROETHENE	1	51.4	48.2	30.3- 67.6	35.0- 62.8	ACCEPTABLE
	2	2.39	2.41	1.02- 3.74	1.37- 3.39	ACCEPTABLE
ARBONTETRACHLORIDE	1	31.1	27.2	16.7- 38.7	19.5- 35.9	ACCEPTABLE
	2	7.66	6.81	3.31- 11.0	4.29- 9.99	ACCEPTABLE
ETRACHLOROETHENE	1	39.6	28.9	15.7- 42.0	19.0- 38.6	CHECK FOR ERRO
	2	6.74	5.36	1.65- 9.06	2.59- 8.11	ACCEPTABLE
BROMODICHLOROMETHANE	1	38.9	32.2	24.5- 45.4	27.1- 42.7	ACCEPTABLE
	2	8.75	7.24	4.11- 11.5	5.05- 10.5	ACCEPTABLE
DIBROMOCHLOROMETHANE	1	56.6	67.7	37.7- 108.	46.6- 98.7	ACCEPTABLE
	2	1.60	2.26	.643- 4.15	1.09- 3.70	ACCEPTABL
BROMOFORM	1	33.9	32.9	21.8- 48.8	25.2- 45.3	ACCEPTABL
	2	5.00	4.93	2.23- 7.22	2.87- 6.58	ACCEPTABL

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT

ORIGINAL (Red)

DATE: 11/17/87

WATER POLLUTION STUDY NUMBER WP019

ABORATORY: NJ136

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
VOLATILE HALOCARBONS IN MICROGRAMS PER LITER:						
METHYLENE CHLORIDE	1	49.5	42.6	25.8- 67.3	31.1- 62.0	ACCEPTABLE
	2	3.42	2.13	D.L.- 5.51	.608- 4.79	ACCEPTABLE
CHLOROBENZENE	1	31.8	30.8	18.7- 43.8	21.9- 40.6	ACCEPTABLE
	2	3.72	3.85	1.48- 6.07	2.07- 5.48	ACCEPTABL
VOLATILE AROMATICS IN MICROGRAMS PER LITER:						
BENZENE	1	9.58	9.89	6.29- 14.0	7.29- 13.0	ACCEPTABL
	2	42.6	42.9	29.4- 57.7	33.0- 54.0	ACCEPTABL
ETHYLBENZENE	1	7.66	8.47	4.52- 11.6	5.44- 10.7	ACCEPTABL
	2	24.0	26.1	16.3- 35.5	18.8- 33.1	ACCEPTABL
TOLUENE	1	5.48	5.95	3.24- 8.80	3.97- 8.07	ACCEPTABL
	2	27.6	29.7	20.8- 39.4	23.2- 37.0	ACCEPTABL
1,2-DICHLOROBENZENE	1	5.15	5.42	1.20- 9.58	2.37- 8.41	ACCEPTABL
	2	58.6	61.4	36.0- 89.4	43.0- 82.4	ACCEPTABL
1,3-DICHLOROBENZENE	1	3.22	3.46	.773- 5.89	1.44- 5.22	ACCEPTABL
	2	24.0	26.0	10.7- 38.1	14.5- 34.3	ACCEPTABL
1,4-DICHLOROBENZENE	1	4.32	4.47	1.15- 8.26	2.13- 7.28	ACCEPT
	2	34.8	35.8	18.8- 55.0	23.6- 50.2	ACCE
MISCELLANEOUS PARAMETERS:						
TOTAL CYANIDE (IN MG/L)	1	0.126	0.124	.0687- .161	.0805- .149	ACCEPTABL
	2	0.284	0.300	.174- .388	.201- .361	ACCEPTABL
NON-FILTERABLE RESIDUE (IN MG/L)	1	67.5	69.4	61.1- 73.6	62.6- 72.0	ACCEPTAB
	2	24.4	24.7	20.5- 27.2	21.3- 26.4	ACCEPTAB

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY

D.L. STANDS FOR DETECTION LIMIT

PERFORMANCE EVALUATION REPORT

DATE: 11/17/

WATER POLLUTION STUDY NUMBER WP019

BORATORY: NJ136

ALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
MISCELLANEOUS PARAMETERS:						
IL AND GREASE	1	29.0	35.3	20.9- 43.0	23.7- 40.3	ACCEPTABLE
IN MG/L)	2	10.3	12.8	3.99- 18.1	5.74- 16.3	ACCEPTABLE
OTAL PHENOLICS	1	0.438	0.505	.229- .775	.298- .706	ACCEPTABLE
IN MG/L)	2	1.16	1.29	.588- 1.96	.762- 1.79	ACCEPTABLE

BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT DATE: 07/27/

WATER SUPPLY STUDY NUMBER WS020

LABORATORY NJ136

ANALYTES	SAMPLE NUMBER	REPORTED VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	PERFORMANCE EVALUATIONS
TRACE METALS IN MICROGRAMS PER LITER:					
ARSENIC	1	109	106	86.8- 121.	ACCEPTABLE
	2	34.0	32.0	25.8- 37.4	ACCEPTABLE
BARIUM	1	77.0	75.0	54.7- 88.6	ACCEPTABLE
	2	746	776	664.- 800.	ACCEPTABLE
CADMIUM	1	17.8	17.0	14.3- 19.6	ACCEPTABLE
	2	4.85	4.16	3.54- 4.79	NOT ACCEPTABLE
CHROMIUM	1	13.0	12.7	10.1- 15.6	ACCEPTABLE
	2	74.5	71.1	61.1- 80.9	ACCEPTABLE
LEAD	1	26.1	25.7	20.6- 30.5	ACCEPTABLE
	2	103	99.0	81.7- 113.	ACCEPTABLE
MERCURY	1	5.14	5.25	3.84- 6.54	ACCEPTABLE
	2	1.73	1.92	1.32- 2.47	ACCEPTABLE
SELENIUM	1	9.9	9.71	6.94- 12.2	ACCEPTABLE
	2	56.3	53.9	42.4- 65.7	ACCEPTABLE
SILVER	1	27.5	27.5	23.1- 31.9	ACCEPTABLE
	2	15.0	13.8	11.2- 16.6	ACCEPTABLE
NITRATE/FLUORIDE IN MILLIGRAMS PER LITER:					
NITRATE AS N	1	0.948	0.900	.762- 1.04	ACCEPTABLE
	2	6.95	7.00	6.18- 7.82	ACCEPTABLE
FLUORIDE	1	0.177	0.180	.148- .215	ACCEPTABLE
	2	1.54	1.60	1.48- 1.69	ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSAR

ORIGIN

PERFORMANCE EVALUATION REPORT DATE: 07/

WATER SUPPLY STUDY NUMBER WS020

LABORATORY NJ136

ANALYTES	SAMPLE NUMBER	REPORTED VALUE		TRUE VALUE*	ACCEPTANCE LIMITS	PERFORMANCE EVALUATIONS
INSECTICIDES IN MICROGRAMS PER LITER:						
ENDRIN	1	0.388		0.344	.211- .448	ACCEPTABLE
	2	6.77		6.19	3.86- 7.84	ACCEPTABLE
LINDANE	1	0.576	**	0.512	.279- .651	ACCEPTABLE
	2	4.23	**	3.84	2.22- 4.79	ACCEPTABLE
METHOXYCHLOR	1	2.37		2.22	1.34- 3.05	ACCEPTABLE
	2	84.2		80.8	52.4- 104.	ACCEPTABLE
TOXAPHENE	3	1.90		1.42	.432- 2.23	ACCEPTABLE
	4	8.93		7.09	3.85- 9.80	ACCEPTABLE
HERBICIDES IN MICROGRAMS PER LITER:						
2,4-D	1	64.9	**	62.7	26.0- 83.8	ACCEPTABLE
	2	3.36		3.22	.413- 5.66	ACCEPTABLE
2,4,5-TP (SILVEX)	1	31.0	**	30.0	9.42- 41.1	ACCEPTABLE
	2	3.63	**	3.71	1.23- 5.00	ACCEPTABLE
TRIHALOMETHANES IN MICROGRAMS PER LITER:						
CHLOROFORM	1	19.2		17.7	14.2- 21.2	ACCEPTABLE
	2	54.4		49.5	39.6- 59.4	ACCEPTABLE
BROMOFORM	1	53.2		42.2	33.8- 50.6	NOT ACCEPTABLE
	2	19.9		16.9	13.5- 20.3	ACCEPTABLE
BROMODICHLOROMETHANE	1	23.6		20.4	16.3- 24.5	ACCEPTABLE
	2	72.1		63.2	50.6- 75.8	ACCEPTABLE
DIBROMOCHLOROMETHANE	1	73.2		56.9	45.5- 68.3	NOT ACCEPTABLE
	2	31.2		24.9	19.9- 29.9	NOT ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY

** SIGNIFICANT GENERAL METHOD BIAS IS ANTICIPATED FOR THIS RESULT.

PERFORMANCE EVALUATION REPORT DATE: 07/2

WATER SUPPLY STUDY NUMBER WS020

LABORATORY NJ136

ANALYTES	SAMPLE NUMBER	REPORTED VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	PERFORMANCE EVALUATIONS
TRIHALOMETHANES IN MICROGRAMS PER LITER:					
TOTAL TRIHALOMETHANE	1	169.2	137.2	110.- 165.	NOT ACCEPTABLE
	2	177.6	154.5	124.- 185.	ACCEPTABLE
VOLATILE ORGANIC COMPOUNDS IN MICROGRAMS PER LITER:					
VINYL CHLORIDE	1	7.06	5.98	3.59- 8.37	ACCEPTABLE
1,1-DICHLOROETHYLENE	1	3.30	2.53	1.52- 3.54	ACCEPTABLE
	2	18.3	12.7	10.2- 15.2	NOT ACCEPTABLE
1,2-DICHLOROETHANE	1	6.99	6.23	3.74- 8.72	ACCEPTABLE
	2	11.1	8.90	5.34- 12.5	ACCEPTABLE
1,1,1-TRICHLOROETHANE	1	12.6	10.5	8.40- 12.6	ACCEPTABLE
	2	196	182.5	146.- 219.	ACCEPTABLE
CARBON TETRACHLORIDE	1	1.52	1.36	.816- 1.90	ACCEPTABLE
TRICHLOROETHYLENE	1	8.44	8.22	4.93- 11.5	ACCEPTABLE
	2	10.8	10.3	8.24- 12.4	ACCEPTABLE
BENZENE	1	3.76	4.32	2.59- 6.05	ACCEPTABLE
TETRACHLOROETHYLENE	2	7.60	8.16	4.90- 11.4	ACCEPTABLE
1,4-DICHLOROBENZENE	1	7.72	6.93	4.16- 9.70	ACCEPTABLE
CHLOROBENZENE	4	14.6	14.6	11.7- 17.5	ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY

ORIGINAL (Red)

PERFORMANCE EVALUATION REPORT DATE: 07/

WATER SUPPLY STUDY NUMBER WS020

LABORATORY NJ136

ANALYTES	SAMPLE NUMBER	REPORTED VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	PERFORMANCE EVALUATIONS
VOLATILE ORGANIC COMPOUNDS IN MICROGRAMS PER LITER:					
METHYLENE CHLORIDE	2	14.4	12.0	9.60- 14.4	ACCEPTABLE
1,1-DICHLOROETHANE	2	11.4	10.3	8.24- 12.4	ACCEPTABLE
1,1-DICHLOROPROPENE	2		31.6	25.3- 37.9	NOT ACCEPTABLE
1,1,2-TRICHLOROETHANE	2	14.2	12.8	10.2- 15.4	ACCEPTABLE
1,1,1,2TETRACHLOROETHANE	2	15.4	17.3	13.8- 20.8	ACCEPTABLE
2-CHLOROTOLUENE	2	3.02	8.28	4.97- 11.6	NOT ACCEPTABLE
4-CHLOROTOLUENE	2	3.02		D.L.- D.L.	NOT ACCEPTABLE
MISCELLANEOUS ANALYTES:					
TURBIDITY	1	4.28	4.50	3.84- 5.08	ACCEPTABLE
(NTU'S)	2	0.51	** 0.500	.341- .779	ACCEPTABLE
PH-UNITS	1	8.56	9.12	8.79- 9.34	NOT ACCEPTABLE
SODIUM (MILLIGRAMS PER LITER)	1	13650	14.5	13.4- 15.9	NOT ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY
** SIGNIFICANT GENERAL METHOD BIAS IS ANTICIPATED FOR THIS RESULT.
D.L. STANDS FOR DETECTION LIMIT

SECTION 2

LABORATORY PERFORMANCE AUDITS

EVALUATIONS INCLUDED FOR:

- EVIDENCE AUDIT BY TECHLAW (CLP HEADQUARTERS)
- ON-SITE EVALUATION BY REGION II & LEMSCO (CLP HEADQUARTERS)
- ON-SITE EVALUATION BY NJDEP (X-195 CONTRACT)
- ON-SITE EVALUATION BY NJDEP (CERTIFICATION)

LABORATORY EVIDENCE AUDIT REPORT

ENVIRONMENTAL TESTING AND CERTIFICATION CORPORATION

March 22, 1988

Environmental Testing and Certification Corporation
284 Raritan Center Parkway
Edison, NJ 08818-7808
(201) 225-6792

June S. Baker	- Quality Assurance Coordinator[1,2,3]
John E. Farrell III	- Technical Manager CLP[1,2,3]
Leslie Clarke	- Project Service Representative[1,3]
Jim Ploscyca	- QA Auditor[1,2,3]
Bill Deckelmann	- Sample Custodian[2]
Paul Cormier	- Dioxin Laboratory Supervisor[2]
Bill O'Keefe	- GC Screening Laboratory[2]
Charlie Weston	- GC/MS Technical Manager[2]
Karen Albretsen	- Sample Preparation Manager[2]

USEPA Region II - Edison, New Jersey
(201) 321-6676

Lisa Gatton-Vidulich	- Acting Deputy Project Officer
Stelios Gerazounis	- EPA Observer

EMSL/LEMSCO - Las Vegas, Nevada
(702) 734-3315

Richard Flotard	- Principal Scientist
Lisa Contreas	- Associate Scientist
Nan Chen	- Research Chemist

NEIC/CEAT (TechLaw) - Denver, CO
(303) 233-1248

Jim Short	- Staff Associate
Teri Goldberg	- Associate Consultant

---

[1]present at pre-audit meeting
[2]contacted during audit
[3]present at post-audit meeting

This work was conducted on behalf of the Environmental Protection Agency's (EPA) National Enforcement Investigations Center (NEIC) under EPA Contract #68-01-7369.

ORIGINAL
(Red)

INTRODUCTION

An audit of laboratory operations pertaining to laboratory security, sample chain-of-custody, and document control procedures for EPA Dioxin Contract 68-01-7366 (IFB WA 86-K357) was conducted at Environmental Testing and Certification (ETC) Corporation in Edison, New Jersey on March 22, 1988. The audit was conducted by NEIC's Contract Evidence Audit Team (CEAT-TechLaw). Procedures and documentation related to sample receiving, sample storage, sample security, sample tracking, and case file organization and assembly were reviewed for conformance to Evidence Audit Requirements. The results of this audit are discussed in this evidence audit report.

EXECUTIVE SUMMARY

This was the seventh audit of ETC conducted by USEPA representatives in support of the Contract Laboratory Program (CLP). The previous audit was conducted on March 20, 1987 and resulted in no recommendations from the CEAT.

The following five findings (non-conformances to Evidence Audit Requirements) were identified during the present audit and are discussed in this report.

Findings

1. The Sample Receipt Form did not contain the name of the laboratory.

2. The presence or absence of airbills was not recorded on the Sample Receipt Form.

3. The laboratory has not developed written SOPs for sample identification.

4. The laboratory has not developed written SOPs for sample tracking.

5. Written SOPs for case file preparation did not describe actual procedures used by the laboratory.

As a result of these findings, the following recommendations were made during the debriefing with the laboratory personnel at the conclusion of the audit on March 22, 1988:

Recommendations

1. The Sample Receipt Form should be revised to include the name of the laboratory.

2. The presence or absence of airbills should be recorded on the Sample Receipt Form.

3. The laboratory should develop written SOPs for sample identification.

4. The laboratory should develop written SOPs for sample tracking.

5. Written SOPs for case file preparation should be revised to describe actual procedures used by the laboratory.

Routine evidence audits will be conducted during the contract period of performance. Corrective action on the above items will be reviewed during the next on-site audit. Periodic audits will be conducted to review continued conformance to Evidence Audit Requirements.

The audit was concluded on March 22, 1988. The audit participants are listed on the cover page of this report.

ORIGINAL
(Red)

PROCEDURAL AUDIT

The procedural audit consisted of review and examination of actual and written standard operating procedures (SOPs) and accompanying documents for the following laboratory operations: sample receiving, sample storage, sample tracking (from receipt to completion of analysis), and case file organization and assembly.

Sample Receiving

EPA sample shipments are delivered to the loading dock (Monday - Saturday, 8:00 a.m. - 9:00 p.m.). The designated sample custodian, Bill Deckelmann, signs the airbill and transfers the container to the isolation laboratory. The sample custodian opens the container, inspects the samples, and reviews the shipping documents. Sample receiving information is recorded on the Sample Receipt Form.

During review of the Sample Receipt Form, the auditors observed that the Sample Receipt Form did not contain the name of the laboratory and the presence or absence of airbills was not recorded.

Written SOPs for sample receiving have been developed and implemented and are documented in ETC IFB 2,3,7,8-TCDD SOP Sample Receipt. The auditors read these SOPs, and they accurately describe the procedures in use for sample receiving.

Sample Storage

Dioxin samples and extracts are stored in the locked isolation laboratory. In addition, sample extracts are stored in a small refrigerator located in the gas chromatograph/mass spectrometer (GC/MS) laboratory. Samples are identified with job numbers (unique to sample) and log link numbers (identifies a sample shipment). Extracts are identified with the job number, the type of analysis, and the date. The laboratory maintains the identity of the sample during preparation by writing the sample identifier on the glassware.

Laboratory security is maintained by keeping all access doors locked. Visitors must sign a logbook in the reception area, receive a visitor's badge, and are escorted through the laboratory. Laboratory personnel run a magnetic card through a reader on the receptionist's desk for laboratory entry.

Written SOPs for sample storage and security have been developed and implemented and are documented in ETC IFB 2,3,7,8-TCDD SOP Sample Storage. The auditors read these SOPs, and they accurately describe the procedures in use for sample storage and security. Written SOPs for sample identification have not been developed.

Sample Tracking

Samples may be tracked through the laboratory from receipt to completion of analysis by using the following documents:

1. Sample Receipt Form
2. Sample Log-In Form
3. Laboratory Chronicle: TCDD Extraction
4. Laboratory Chronicle: GC/MS Department

The Sample Receipt Form and the Sample Log-In Form are used to record sample receiving information. The Laboratory Chronicles are used to record preparation and analysis information.

Written SOPs for sample tracking have not been developed.

Case File Organization and Assembly

Case files are stored in the document control room. Case files are arranged by EPA case number. Tracy Fedosh or Lori Handle are responsible for case file organization. According to June Baker, QA coordinator, the laboratory has not received confidential documents.

Written SOPs for case file organization and assembly have been developed and implemented and are documented in ETC IFB 2,3,7,8-TCDD SOP Integration of PCDX/PCDF. The auditors read these SOPs, and they do not describe how case file documents are numbered, inventoried, and purged.

EVIDENCE AUDIT

The evidence audit consisted of review and examination of case file documentation. Case files contain the following types of documents:

1. Document Inventory
2. Airbill
3. CLP Dioxin Shipment Record
4. Chain-of-Custody - Receipt of Cooler
5. Chain-of-Custody Record

ORIGINAL (Red)

6. Sample Tags
7. ETC Lead Report Tracking Form
8. GC/MS Data - Narrative
9. Final Report - Data, Logs, Etc.

The case file examined during the audit was #8600.

Documentation in the case file is organized and developed according to Evidence Audit Requirements.

AUDIT FINDINGS

The following five findings (non-conformances to Evidence Audit Requirements) are based on the results of the procedural and evidence audits.

1. The Sample Receipt Form did not contain the name of the laboratory.

2. The presence or absence of airbills was not recorded on the Sample Receipt Form.

3. The laboratory has not developed written SOPs for sample identification.

4. The laboratory has not developed written SOPs for sample tracking.

5. Written SOPs for case file preparation did not describe actual procedures used by the laboratory.

SUMMARY

At the conclusion of the audit on March 22, 1988, a debriefing was held by the audit team with ETC personnel. During this debriefing, the evidence auditors made the following recommendations based on the findings discussed in this report.

1. The Sample Receipt Form should be revised to include the name of the laboratory.

2. The presence or absence of airbills should be recorded on the Sample Receipt Form.

3. The laboratory should develop written SOPs for sample identification.

4. The laboratory should develop written SOPs for sample tracking.

5. Written SOPs for case file preparation should be revised to describe actual procedures used by the laboratory.

EVIDENCE
AUDIT
TEAM

April 18, 1988

Mr. Angelo Carasea
Project Officer (WH-548A)
USEPA Headquarters
Office of Solid Waste and
Emergency Response
Analytical Operations Branch
401 M Street, S.W.
Washington, DC 20460

RE: Transmittal of CEAT Laboratory Evidence Audit Report for Environmental Testing and Certification Corporation

Dear Angelo:

Enclosed is a copy of the Contract Evidence Audit Team (CEAT-TechLaw) evidence audit report for the audit conducted at Environmental Testing and Certification (ETC) Corporation on March 22, 1988.

Based on the results of the audit and examination of the audit documentation and procedures used, the chain-of-custody, document control, and evidence security procedures followed by ETC meet or exceed Evidence Audit Requirements. Exceptions to this statement are expressed as findings in the attached report.

CEAT-TechLaw has conducted a management review of the audit report and audit workpapers. The review was made in accordance with generally accepted evidence auditing standards and included such tests of the documentation and other such auditing procedures as were considered necessary in the circumstances.

The subject evidence audit report has been received and approved by NEIC, and copies have been transmitted to the Regional Deputy Project Officer and to the laboratory.

If you have any questions, please contact the Project Officer, Rob Laidlaw, or Don Roche at (303) 236-5122, FTS 776-5122.

Sincerely,

Jeffrey C. Worthington
Contract Evidence Audit Team

Concurrence:

Donald J. Roche
National Enforcement Investigations Center

lkl

Enclosure

cc: Lou Bevilacqua, USEPA Region II DPO

IF: 111-001

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY-LAS VEGAS
P.O. BOX 93478
LAS VEGAS, NEVADA 89193-3478
(702/798-2100 - FTS 545-2100)

(Red)

APR 15 1988

SUBJECT: On-Site Laboratory Evaluation Report

FROM: Jimmie D. Petty
Chief, Quality Assurance Research Branch, QAD

TO: Angelo Carasea
Organic Project Officer, OERR (WH-548A)

Attached is the routine organic analysis on-site laboratory evaluation report for Environmental Testing Certification (ETC), Edison, New Jersey. The evaluation was conducted on March 22, 1988.

Please contact me at FTS 545-2381 if additional information is needed.

Attachment

cc:
Louis Bevilacqua, Region 2
Jack Farrell, ETC

Lockheed [illegible]

Environmental Programs Office
1050 E. Flamingo Road, Suite 120, Las Vegas, Nevada 89119
(702) 734-3200

March 30, 1988

United States Environmental
Protection Agency
P.O. Box 93478
Las Vegas, Nevada 89193-3478

ATTENTION: DR. J. D. PETTY

VIA: D. C. PUDVAH D C Pudvah 4/6/88

SUBJECT: ORGANIC ON-SITE LABORATORY EVALUATION REPORT

Dear Dr. Petty:

An Organic On-Site Laboratory Evaluation of Environmental Testing Certification (ETC) performed on March 22, 1988, has been completed. Presently, ETC does not hold an organic contract. The facilities and laboratory procedures were reviewed and suggestion were made in the event of a contract being awarded. The following items must be given attention in order to improve data integrity:

1. Volatile and semi-volatile samples and extracts were not kept separate while in cold storage.

2. Solvent levels on vials of spiking and calibration solutions should be marked to note any loss resulting from storage.

3. All logbooks should be reviewed, signed and dated by supervisory personnel.

4. All primary standards must be traceable to EPA reference standards.

ORIGINAL

Details of the above items may be found in the summary text of this report. An evidentiary audit was conducted simultaneously by the Contract Evidence Audit Team (CEAT) Techlaw.

Very truly yours,

Lisa J. Contreras

L. J. Contreras
Associate Scientist
Methods Performance
Monitoring Section

LJC/ahh

cc: QA - 3-183
J.O. 70.02
WP-2266C

ORIGINA (Red)

Laboratory: Environmental Testing and Certification (ETC)

Address: 284 Raritan Center Parkway

City: Edison State: NJ Zip: 05818-7308 Telephone: (201) 225-5600

Type of Evaluation: Organic On-Site Evaluation

Date of Evaluation: March 22, 1987

Contract Number: Not Applicable

PERSONNEL CONTACTED

Name	Title
Jack Farrell	Technical Manager
June Baker	QA Coordinator
Jim Ploscyca	QA Auditor
Leslie Clarke	Project Representative
Ken Hebel	Operations Manager

LABORATORY EVALUATION TEAM

Name	Title
Lisa Gatton-Vidulich	Acting DPO, Region 2
Stelios Gerazeunis	DPO Representative, Region 2
Richard Flotard	Principal Scientist, LEMSCO
Lisa Contreras	QA Evaluator, LEMSCO
James Short	Evidence Auditor, Techlaw
Teri Goldberg	Evidence Auditor, Techlaw

(Rec)

Summary of Laboratory Evaluation

A. Procedural Changes the Laboratory Should Implement

The following comments refer to deficiencies noted in the Laboratory Evaluation Checklist (Attachment 1).

CONTRACTUAL ITEMS

1. Resumes must be submitted to document the qualifications of laboratory personnel.

2. Primary standards must be traceable to EPA reference standards. The laboratory must create an SOP for traceability of standards.

3. VOA holding blanks should be utilized to determine contamination.

NONCONTRACTUAL ITEMS

1. Volatile and semi-volatile samples and extracts should be separated while in cold storage.

2. All logbooks should be reviewed, signed, and dated by supervisory personnel.

3. Solvent levels on vials of spiking and calibration solutions should be marked to note any loss resulting from storage.

4. The SOP for receipt and storage should document actions taken in a problem situation.

5. The air-flow of the hoods should be checked and recorded each quarter.

6. The balances should be calibrated in the approximate range of sample weight.

7. All analytical reagents should be dated upon receipt to assure first-in first-out use.

8. The laboratory should use proper correction methods in logbooks.

9. The laboratory should create quality control charts available for on-site laboratory inspection.

Attachment 1

Laboratory Evaluation Checklist

I. Organization and Personnel (Page 1 of 2)

ITEM	YES	NO	COMMENT
Laboratory or Project Manager (individual responsible for overall technical effort) Name: Jack Farrell	x		Qualified.
GC/MS Operator: Name: Tom Rusowich Name: Sam Gibson (Exhibit A, page 8, item E, 10/86)	x		Qualified.
GC/MS Spectral Interpretation Specialist Name: Tom Rusowich/Sam Gibson (Exhibit A, page 8, item E, 10/86)	x		Qualified.
Purge and Trap Specialist Name: Richard Losche Name: _____ (Exhibit A, page 8, item E, 10/86)			Resume to be sent.
Pesticide Residue Analysis Specialist Name: John Strain Name: _____ (Exhibit A, page 8, item E, 10/86)			Resume to be sent.
Extraction Concentration Specialist Name: Karen Albertsen Name: _____ (Exhibit A, page 8, item E, 10/86)	x		Qualified.

I. Organization and Personnel (Page 2 of 2)

ITEM	YES	NO	COMMENT
Is the sample custodian designated? If yes, name of sample custodian Name: Bill Deckelmann	x		
Is the glassware technician designated? Name: Marge Fenyar Name: Anna Stensler	x		
Was the Quality Assurance Officer available during the evaluation? Name: Jim Ploscyca	x		
Does the Laboratory Quality Assurance Officer report to senior management levels?	x		
Do personnel assigned to this project have the appropriate educational background to successfully accomplish the objectives of the program?	x		See above comments.
Is the organization adequately staffed to meet project commitments in a timely manner?	x		
Were all key laboratory personnel available? If not list those not available.	x		

Additional Comments

II. Sample Receipt and Storage Area (Page 1 of 2)

ITEM	YES	NO	COMMENT
Are written Standard Operating Procedures (SOPs) developed for receipt and storage of samples?	x		See comment 1.
Is the appropriate portion of the SOP available to the sample custodian at the sample receipt/ storage area?	x		
Are the sample shipping containers opened in a manner which prevents possible laboratory contamination?	x		Opened in hoods.
Are samples that require preservation stored in such a way as to maintain their preservation? VOA-Exhibit D, Pg VOA D-4, Part A, Section 1.1 SVOA-Exhibit D, Pg SV D-4, Part A, Section 1.1 Pest-Exhibit D, Pg Pest D-5 Part A, Section 1.1	x		
Are volatile samples stored separately from semi-volatile samples?		x	In sample receipt area.
Are VOA holding blanks utilized at a frequency consistent with IFB requirements and is the data maintained for on-site inspection? (VOA-Exhibit D, Pg VOA D-14, Section 2.2)		x	Had holding blanks when contract in progress.
Are adequate facilities provided for storage of samples, including cold storage?	x		
Is the temperature of the cold storage recorded daily in a logbook?	x		
Are temperature excursions noted and are appropriate actions taken when required?	x		

II. Sample Receipt and Storage Area (Page 2 of 2)

ITEM	YES	NO	COMMENT
Are the sample receipt/storage and temperature logbooks maintained in a manner consistent with GLP?	x		
Has the supervisor of the individual maintaining the document(s) personally examined and reviewed the document(s) periodically, and signed his/her name therein, together with the date and appropriate comments as to whether or not document(s) are being maintained in an appropriate manner?		x	See comment 2.

Additional Comments

EOP

1. The SOP for receipt and storage does not document procedures for a problem situation.

2. Logbooks are not reviewed, signed and dated by the supervisor.

III. Sample Preparation Area (Page 1 of 5)

When touring the facilities, give special attention to: (a) the overall appearance of organization and neatness, (b) the proper maintenance of facilities and instrumentation, (c) the general adequacy of the facilities to accomplish the required work.

ITEM	YES	NO	COMMENT
Is the laboratory maintained in a clean and organized manner?	x		Except balance.
Does the laboratory appear to have adequate workspace (120 sq. feet, 6 linear feet of unencumbered bench space per analyst)?	x		
Are the toxic chemical handling areas either a stainless steel bench or an impervious material covered with absorbent materials?	x		
Are contamination-free areas provided for trace level analytical work?	x		Adjacent lab.
Are contamination-free work areas provided for the handling of toxic materials (e.g., glove box)?	x		
Are exhaust hoods provided to allow contamination-free work with volatile materials?	x		
Is the air flow of the hoods periodically checked and recorded (i.e., once per quarter)?		x	Not documented this quarter.
Are chemical waste disposal policies/procedures well-defined and followed by the laboratory?	x		

III. Sample Preparation Area (Page 2 of 5)

ORIGINAL (Red)

ITEM	YES	NO	COMMENT
Can the laboratory supervisor document that trace-free water is available for preparation of standards and blanks?		x	See comment 7.
Is the analytical balance located away from draft and areas subject to rapid temperature changes?	x		
Has the balance been calibrated and checked within one year by a certified technician?	x		
Are the balance(s) routinely checked with the appropriate range of class S (traceable) weights before each weighing session and are the results recorded in a logbook?		x	See comment 3.
Are the solvent storage cabinets properly vented as appropriate for the prevention of possible laboratory contamination?		x	Not vented.
Are reagent grade or higher purity chemicals used to prepare standards?	x		
Are analytical reagents dated upon receipt?		x	Reagents not dated.
Are reagent inventories maintained on a first-in, first-out basis?	x		See comment 4.
Are analytical reagents checked out before use?	x		

III. Sample Preparation Area (Page 3 of 5)

ITEM	YES	NO	COMMENT
Are spiking/calibration standards preparation and tracking logbook(s) maintained for:			
Base-neutral/acids			
(Exhibit E, Pg 8, Section 8)	x		Not using acceptable correction methods.
(Exhibit D, Pg SV D-6, Section 4.7)	x		
Pesticides			
(Exhibit E, Pg 8, Section 8)	x		
(Exhibit D, Pg Pest D-8, Section 4.7)	x		
Volatiles			
(Exhibit E, Pg 8, Section 8)	x		
(Exhibit D, Pg VOA D-18, Section 4.6)			
Are the primary standards traceable to EPA reference standards for: (Exhibit E, Pg 6, Section 5.1.3)			
Base-neutral/acids			
(Exhibit D, Pg SV D-26, Section 3.2)		x	SOP must be written.
Pesticides			
(Exhibit D, Pg Pest D-32, Section 4.2.1)		x	
Volatiles			
(Exhibit D, pg VOA D-17, Section 4.4)		x	
Are fresh analytical standards prepared at a frequency consistent with the IFB requirements for:			
Base-neutral/acids			
(Exhibit D, Pg SV D-27, Section 3.2.1.2)	x		
Pesticides			
(Exhibit D, Pg Pest D-32, Section 4.2.2)	x		
Volatiles			
(Exhibit D, Pg VOA D-18, Section 4.4.5)	x		
Are reference materials properly labeled with concentrations, date of preparation, and the identity of the person preparing the sample, and/or is a traceable reference code number used?	x		

III. Sample Preparation Area (Page 4 of 5)

ORIGINAL (Red)

ITEM	YES	NO	COMMENT
Do the analysts record bench data in a neat and accurate manner?	x		
Are the sample preparation area and temperature logbooks maintained in a manner consistent with GLP?	x		
Has the supervisor of the individual maintaining the document(s) personally examined and reviewed the document(s) periodically, and signed his/her name therein, together with the date and appropriate comments as to whether or not the document(s) is being maintained in an appropriate manner?		x	See comment 2.
Are standards stored separately from sample extracts?	x		
Are volatile and semi-volatile solutions properly segregated?		x	Not in sample receipt.
Is the appropriate portion of the SOP available to the analyst at the sample preparation area?	x		
Is the SOP for glassware washing posted at the cleaning station?	x		
Is the temperature of the refrigerators/freezers recorded daily?	x		
Are temperature excursions noted and appropriate actions taken when required?	x		

III. Sample Preparation Area (Page 5 of 5)

Additional Comments

3. The balance should be calibrated in the approximate range of sample weight.

4. Laboratory management stated reagents were used on first-in, first-out basis.

7. The laboratory does not document trace free water.

IV. Sample Analysis Instrumentation (Page 1 of 6)

A. GC/MS/DS Instrumentation

		Manufacturer	Model	Software/ Revision	Installation Date	Purge and Trap Manuf. Model	ID #	Install Date
GC/MS ID #	C	HP	5995	Rev. E	*	TEK LSC 2		*
GC/MS ID #	G	HP	5995	Rev. E	*			

* The installation date was unavailable during the on-site. The laboratory will send this information.

IV. Sample Analysis Instrumentation (Page 2 of 6)

ITEM	YES	NO	COMMENT
Are manufacturer's operating manuals readily available to the operator?	x		
Is service maintenance by contract?	x		
Are extensive in-house replacement parts available?	x		
Is the preventative maintenance applied?	x		
Is a permanent service record maintained in a logbook?	x		
Has the instrument been modified in any way?		x	No modifications.
Is the instrument properly vented or are appropriate traps in place?	x		
Is a glass jet separator in place and operational?	x		
Is a split/splitless capillary injector in place?	x		
Is raw data being archived properly (i.e., magnetic tape)?	x		

IV. Sample Analysis Instrumentation (Page 3 of 6)

ITEM	YES	NO	COMMENT
Are in-house quality control charts maintained and available for on-site inspection?			
Base-neutral/acids:			
EICP areas of internal standards	____	x	
Retention times of internal standards	____	x	
(Exhibit E, Pg 41, Section 6.1.1.1	____	x	
Volatiles:			See comment 5.
EICP areas of internal standards	____	x	
Retention times of internal standards	____	x	
(Exhibit E, Pg 23, Section 6.1.1.1)			
Are the corrective actions described in the IFB implemented and documented as required?			
Base-neutral/acids:	x	____	
Volatiles:	x	____	
(Exhibit E, Pg 23 and 41, Section 6.1.1.1)			

Additional Comments

5. The program to create quality control charts is available to the QA officer, but the laboratory is not producing the charts as of yet.

IV. Sample Analysis Instrumentation (Page 4 of 6)

B. GC Instrumentation

	Manufacturer	Detectors	Installation Date	Data System Manuf. Model	Data System Installation Date
GC/ ID # N	Hewlett-Packard 5890	EC2	*	HP 1000	*
GC/ ID # B	Hewlett-Packard 5890	EC2	*	HP 1000	*
GC/ ID # K	Hewlett-Packard 5880	EC2	*	HP 1000	*
GC/ ID # H	Hewlett-Packard 5880	EC[2]	*	HP 1000	*

* The installation date was unavailable during the on-site. The laboratory will send this information.

ORIGINAL (Red)

IV. Sample Analysis Instrumentation (Page 5 of 6)

ITEM	YES	NO	COMMENT
Are the manufacturer's operating manuals readily available to the operator?	x		
Is service maintenance by contract?	x		
Are in-house replacement parts available?	x		
Is preventative maintenance applied?	x		
Is a permanent service record maintained in a logbook?	x		
Has the instrument been modified in any way?		x	No modifications.
Is the instrument properly vented or are appropriate traps in place?	x	x	See comment 6.
Are Arochlor 1221 and 1232 standards run at the proper frequency and the data maintained for on-site inspection? (Exhibit E, Pg 55, Section 4.3.4.2)			Not applicable.
Are data generated by the Alumina Equivalency Check available for on-site inspection? If yes, are the following criteria met? (Exhibit D. Pg 15, Section 1.5.8)			Not applicable.
Is the absence of tribromophenol noted?			Not applicable.
Is the percent recovery of all single component pesticides $\geq$ 80%, except for endosulfan sulfate which must be $\geq$ 60%, and endrin Aldehyde which should not be recovered?			Not applicable.

IV. Sample Analysis Instrumentation (Page 6 of 6)

C. Additional Comments

6. The purge was not trapped.

V. Data Handling and Review

ORIGINAL (Red)

ITEM	YES	NO	COMMENT
Are data calculations spot-checked by a second person?	x		1 sample/batch or 10 percent of samples.
Do records indicate that appropriate corrective action has been taken when analytical results fail to meet QC criteria?	x		
Are computer programs validated before use?	x		In-house preparation.
Do supervisory personnel review the data and QC results?	x		

VI. Quality Control Manual Checklist

ITEM	YES	NO	COMMENT
Does the laboratory maintain a project specific Quality Control Manual?	x		
Are outdated portions of the QC Manual properly archived?	x		
does the manual address the important elements of a QC program, including the following:			
a. Personnel?	x		
b. Facilities and equipment?	x		
c. Operation of instruments?	x		
d. Documentation of procedures?	x		
e. Preventative maintenance?	x		
f. Reliability of data?	x		
g. Data validation?	x		
h. Feedback and corrective action?	x		

VII. Summary

ORIGINAL (Red)

A. Summary Checksheet (Page 1 of 2)

ITEM	YES	NO	COMMENT
Do responses to the evaluation indicate that project and supervisory personnel are aware of QA/QC and its application to the project?	x		
Do project and supervisory personnel place positive emphasis on QA/QC?	x		
Have responses with respect to QA/QC aspects of the project been open and direct?	x		
Has a cooperative attitude been displayed by all project and supervisory personnel?	x		
Have any QA/QC deficiencies been discussed before leaving?	x		
Is the overall quality assurance adequate to accomplish the objectives of the project?	x		
Have corrective actions recommended during previous evaluations been implemented? If not, provide details in Section VII.B.		x	

VII. Summary (Page 2 of 2)

B. Additional Comments

1. Volatile and semi-volatile samples and extracts were not kept separate while in cold storage.

2. Solvent levels on vials of spiking and calibration solution should be marked to note any loss resulting from storage.

3. It was recommended that solvents and other reagents be dated upon receipt to assure first-in first-out use.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY-LAS VEGAS
P.O. BOX 93478
LAS VEGAS, NEVADA 89193-3478
(702/798-2100 - FTS 545-2100)

ORIGINAL (Red)

APR 15 1988

SUBJECT: On-Site Laboratory Evaluation Report

FROM: Jimmie D. Petty
Chief, Quality Assurance Research Branch, QAD

TO: Angelo Carasea
Organic Project Officer, OERR (WH-548A)

Attached is the routine organic dioxin analysis on-site laboratory evaluation report for Environmental Testing and Certification, Edison, New Jersey. The evaluation was conducted on March 22, 1988.

Please contact me at FTS 545-2381 if additional information is needed.

Attachment

cc:
Louis Bevilacqua, Region 2
Jack Farrell, ETC

Lockheed

Environmental Programs Office
1050 E. Flamingo Road, Suite 120, Las Vegas, Nevada 89119
(702) 734-3200

7 April 1988

United States Environmental
Protection Agency
P.O. Box 93478
Las Vegas, NV 89193-3478

ATTENTION: Dr. J. D. Petty

VIA: D.C. Pudvah D.C. Pudvah 4/8/88

SUBJECT: Routine Dioxin Organic On-Site Laboratory Evaluation Report. For Environmental Testing and Certification on March 22, 1988.

Dear Dr. Petty:

The routine Dioxin Organic On-Site Evaluation of Environmental Testing and Certification has been completed. The following items must be given attention in order to improve data integrity:

1. The SOP for the sample receipt area should be expanded to include corrective actions. ESM-C-009 Section 4 has been revised to include this.

2. The analyst preparing standards should mark the initial level of the solution on the container.

3. Balances used to weigh samples should be calibrated with a weight in the same range as the size of a typical sample aliquot.

4. Analytical reagents should be dated upon receipt and opening. The laboratory should document that they have checked the purity of reagents used in these analyses.

5. The laboratory should maintain a file to document water quality by keeping a series of method blanks in a folder available for on-site inspection.

6. All logs associated with this project must be periodically reviewed by a supervisor or his designee, signed and dated, along with comments on the acceptability of the document.

ORIGINAL (Red)

Details of the above items may be found in the text of this report. An evidentiary audit was conducted simultaneously by the Contract Evidence Audit Team (CEAT) Techlaw. Their findings will be provided in a separate report.

Very truly yours,

R D Flotard

R. D. Flotard
Principal Scientist
Quality Assurance Department

rdf
Attachment

cc: QA 4-110
J.O. 70.02

Laboratory: Environmental Testing and Certification

Address: 284 Raritan Center Parkway

City: Edison State: N.J. Zip Code: 05818-7308 Telephone: 201-225-5600

Type of Evaluation: Routine Dioxin Organic On-Site Laboratory Evaluation

Date of Evaluation: 22 March 1988

Contract Number: 68-01-7366

Contract Title: Chemical Analytical Services for Dioxin

Personnel Contacted:

Name	Title:
Jack Farrel	Technical Manager
Dave Speis	GC/MS Manager
June Baker	QA Coordinator
Ken Hebel	Operations Manager
Jim Ploscyca	QA Auditor
Leslie Clarke	Project Representative

Laboratory Evaluation Team:

Name	Title:
Richard Flotard	Principal Scientist, LEMSCO
Lisa Contreras	Associate Scientist, LEMSCO
Lisa Gatton-Vidulich	Acting DPO, USEPA
Stelios Gerazeunis	Region II, USEPA
James Short	Staff Associate, TECHLAW
Teri Goldberg	Associate Consultant, TECHLAW

ORIGINAL (Red)

Summary of Laboratory Evaluation

ORIGINAL (Red)

A. Procedural Changes the Laboratory Should Implement

The following comments refer to the deficiencies noted in the Laboratory Evaluation Checklist (Attachment 1)

CONTRACTUAL ITEMS

1. The laboratory must submit current resumes for all employees added to this project since the last on-site evaluation.

2. The SOP for the sample receipt area should be expanded to include corrective actions.

NONCONTRACTUAL ITEMS

1. The analyst preparing standards should mark the initial level of the solution on the container.

2. Balances used to weigh samples should be calibrated with a weight in the same range as the size of a typical sample aliquot.

3. Analytical reagents should be dated upon receipt and opening. The laboratory should document that they have checked the purity of reagents used in these analyses.

4. The laboratory should maintain a file to document water quality by keeping a series of method blanks in a folder available for on-site inspection.

5. The laboratory must submit information documenting instrument installation dates to EMSL-LV for GC/MS instruments used for this task.

6. All logs associated with this project must be periodically reviewed by a supervisor or his designee, signed and dated, along with comments on the acceptability of the document.

B. Review of Data Audit Report

The following comments refer to the Summary Conclusion section of the data audit report for SAS Case 8600 (Attachment 2).

Five minor errors were noted in the audit, for an overall score of 0.5 operational defects.

Report Item No.	Comments	Action*
m-2	Incorrect formula used to calculate SD and therefore RSD (used N instead of N-1 in the denominator of the formula)	has been corrected
see audit enclosure case narrative	The laboratory experienced problems with the column performance solution. E. Kantor of EMSL-LV said that other labs were not having a problem with this solution.	3

B. Review of Data Audit Report, Continued

Report Item No.	Comments	Action*
see audit enclosure pages 6, 7	The laboratory used a six month old initial calibration in this case. Even though contract requirements were met, sensitivity of the GC/MS had decreased significantly and good laboratory practice would indicate the need to determine why this is happening.	has been corrected
see audit enclosure page 3	Concentration calibration solutions used in this SAS were different from what is listed in the RAS contract. The laboratory did not explain why the standard CC solutions were not used.	3

C. Issues to be Resolved by the Project Officer/Deputy Project Officer (PO/DPO):

No additional problems were noted.

* = 1. No action required
2. Resubmission Required
3. Action Required by Project Officer

Attachment 1

Laboratory Evaluation Checklist

ORIGINAL (Red)

I. Organization and Personnel (page 1 of 2)

ITEM	YES	NO	COMMENT
Laboratory or Project Manager (individual responsible for overall technical effort) Name: Jack Farrell	X		Qualified
GC/MS Operator Name: Tom Rusowich Name: Sam Gibson Experience: 1 year minimum requirement per appropriate instrument	X X		Qualified Qualified
GC/MS Spectral Interpretation Specialist Name: Tom Rusowich Sam Gibson Experience: 2 years minimum requirement	X		Qualified
Extraction Concentration Expert Name: Karen Albertsen Name: Paul Cormier Experience: 6 months minimum requirement	X		Qualified Uncertain, resume to be sent
Do personnel assigned to this project have the appropriate educational background to successfully accomplish the objectives of the program?	X		
Do personnel assigned to this project have the appropriate level and type of experience to successfully accomplish the objectives of this program?	X		
Is the organization adequately staffed to meet project commitments in a timely manner?	X		

ORIGINAL (Red)

Does the laboratory Quality Assurance Supervisor report to senior management levels?	X		
Was the Project Manager available during the evaluation?	X		
Was the Quality Assurance Supervisor available during the evaluation?	X		

Additional Comments: The laboratory was requested to send resumes for all personnel involved with the dioxin and CLP organic programs.

A. General Facilities (page 1 of 2)

ORIGINAL (Red)

ITEM	YES	NO	COMMENT
Does the laboratory appear to have adequate workspace (120 sq. feet, 6 linear feet of unencumbered bench space per analyst)?	X		
Are voltage control devices used on major instrumentation?	X		
Does the laboratory have a source of distilled/demineralized water?	X		
Is the conductivity of distilled/demineralized water routinely checked and recorded?		X	Water quality is not currently being documented by ETC.
Is the analytical balance located away from draft and areas subject to rapid temperature changes?	X		
Has the balance been calibrated and checked within one year by a certified technician?	X		
Are the balance(s) routinely checked with the appropriate range of class S (traceable) weights before each weighing session and are results recorded in a logbook?	X		Balances are checked, but not using weights in the actual range of the samples.
Are properly filtered exhaust hoods provided to allow efficient work with hazardous/toxic materials?	X		
Is the laboratory maintained in a clean and organized manner?	X		
Is a glove box available to allow efficient work with hazardous/toxic materials?	X		

A. General Facilities (page 2 of 2)

ORIGINAL (Red)

ITEM	YES	NO	COMMENT
Is the toxic chemical handling area either a stainless steel bench or an impervious material covered with absorbent material?	X		
Are adequate facilities provided for storage of samples, extracts, and calibration standards, including temperature controlled storage?	X		
Is the temperature of the cold storage units recorded daily in logbooks?	X		Yes, with the exception of the clean lab unit.
Are chemical waste disposal policies/procedures adequate?	X		
Are contamination-free areas provided for trace level analytical work?	X		
Can the laboratory supervisor document that trace free water is available for preparation of standards and blanks?		X	The laboratory does not document this item.
Is the laboratory secure?	X		
Can the laboratory supervisor document that organic solvents used are free of trace contaminants?		X	Documentation was not available to the evaluators.

Additional Comments on Laboratory Facilities:

1. The laboratory has agreed to begin to document the quality of the water used for dioxin analysis by maintaining a file of method blanks for future on-site inspections.

2. A temperature log will be prepared for the refrigerator in the dioxin clean laboratory.

B. Equipment (page 1 of 3)

1. GC/MS/DS Instrumentation

	Manufacturer	Model	Installation Date	Data System
GC/MS ID # K	Hewlett Packard	5890 GC 5920 MSD	NA*	RTE-6 Rev.E
GC/MS ID # O	Hewlett Packard	5996	NA*	RTE-6 Rev.E
GC/MS ID # J	Hewlett Packard	5996	NA*	RTE-6 Rev.E

* Information on the installation of the equipment was not available during the on-site visit. The laboratory has agreed to forward this information to EMSL-LV.

Additional Comments on GC/MS/DS Instrumentation:

None

B. Equipment (page 2 of 2)

ORIGINAL (Red)

ITEM	YES	NO	COMMENT
Are manufacturer's operating manuals readily available to the operator?	X		
Is there a calibration protocol available to the operator?	X		
Are calibration results kept in a permanent record?	X		
Does the laboratory have service contracts for the laboratory instruments?	X		
Is preventative maintenance applied?	X		
Is a permanent service record maintained in a logbook?	X		
Has the instrument been modified in any way?		X	No modifications to the units.
Is the instrument properly vented or are appropriate traps in place?	X		
Is a 9-track magnetic tape unit available?	X		
Is a split/splitless capillary injector in place?	X		
Is the column direct to the source?	X		
Are sufficient in-house replacement parts available?	X		

Additional Comments on GC/MS Instrumentation:

None

II. Documentation (page 1 of 2)

When reviewing documentation, give special attention to:

(a) traceability
(b) neatness and completion

ORIGINAL (Red)

A. Documentation/Tracking

ITEM	YES	NO	COMMENT
Is a sample custodian designated? If yes, name of sample custodian. Name: Bill Deckelmann	X		
Are the sample custodian's procedures and responsibilities documented? If yes, where are these documented?	X		Documented in the sample receipt SOP.
Is a written Standard Operating Procedure (SOP) developed for receipt of samples? If yes, where is the SOP documented (laboratory manual, written instructions, etc.)?	X		Documented in the QA manual. A copy is kept in the sample receipt area.
Are quality assurance procedures documented and available to the analysts? If yes, where are these documented?	X		Located in the QA manual.
Are written Standard Operating Procedures (SOP) developed for compiling and maintaining sample document files? If yes, where are the SOPs documented (laboratory manual, written instructions, etc.)?	X		Located in the QA manual.
Are the magnetic tapes stored in a secure area?	X		
Is a permanently-bound notebook with preprinted, consecutively-numbered pages being used?		X	Computer generated data sheets are used.

B. Documentation/Notebooks (page 2 of 2)

ORIGINAL

ITEM	YES	NO	COMMENT
Is the type of work clearly displayed on the notebook (i.e. EPA Extraction)?	X		
Is the notebook maintained in a legible manner?	X		
Are entries noting anomalies routinely recorded?			None was observed.
Has the analyst avoided obliterating entries?	X		See Note 1.
Are inserts (i.e., chromatograms, computer printout, etc.) permanently affixed in the notebook and signed across insert edge and page?		X	The use of this technique for enclosures was suggested.
Has the supervisor of the individual maintaining the notebook personally examined and reviewed the notebook periodically, and signed his/her name therein, together with the date and appropriate comments as to whether or not the notebook is being maintained in an appropriate manner?		X	This practice will be instituted by the laboratory. It is not currently practiced regularly.
Where applicable, is the notebook holder referencing reports or memoranda pertinent to the contents of an entry?		X	No examples of this were noted in any of the notebooks.

Note 1. The laboratory should follow prescribed procedures for error correction in laboratory notebooks. Cross out the incorrect entr place the correction nearby, and sign and date the new entry.

III. Analytical Methodology (page 1 of 2)

ORIGINAL (Red)

ITEM	YES	NO	COMMENT
Are the required methods used?	X		
Is there any unauthorized deviation from contract methodology?		X	None was observed but no samples were being processed.
Are written analytical procedures provided to the analyst?	X		
Are distilled-in-glass grade or other high purity chemicals used to prepare standards?	X		
Are fresh analytical standards prepared at a frequency consistent with good QA?	X		
Are reference materials properly labeled with concentrations, date of preparation, and the identity of the person preparing the sample?	X		The initial level of stock standards should be marked on the container.
Is a standards preparation and tracking logbook maintained?	X		
Do the analysts record bench data in a neat and accurate manner?	X		
Is the appropriate instrumentation used in accordance with the required protocol?	X		

IV. Quality Control Manual Checklist (page 1 of 2)

ORIGINAL

ITEM	YES	NO	COMMENT
Does the laboratory maintain a Quality Control Manual?	X		
Does the manual address the important elements of a QC program, including the following?	X		
a. Personnel?	X		
b. Facilities and equipment?	X		
c. Operation of instruments?	X		
d. Documentation of procedures?	X		
e. Procurement and inventory practices?	X		
f. Preventive maintenance?	X		
g. Reliability of data?	X		
h. Data validation?	X		
i. Feedback and corrective action?	X		
j. Instrument calibration?	X		
k. Recordkeeping?	X		
l. Internal audits?	X		

IV. Quality Control Manual Checklist (page 2 of 2)

ITEM	YES	NO	COMMENT
Are QC responsibilities and reporting relationships clearly defined?	X		
Have standard curves been adequately documented?			Not observed
Are laboratory standards traceable?	X		
Are quality control charts maintained for each routine analysis?	X		
Do QC records show corrective action when analytical results fail to meet QC criteria?	X		
Do supervisory personnel review the data and QC results?	X		

V. Data Handling Checklist (page 1 of 1)

ORIGIN

ITEM	YES	NO	COMMENT
Are data calculations checked by a second person?	X		10% of the calculations are checked with a minimum of 1 sample per batch.
Are data calculations documented?	X		
Do records indicate that corrective action has been taken on rejected data?	X		
Are limits of detection determined and reported properly?	X		
Are all data and records retained for the required time?	X		
Are quality control data (e.g., standard curve results of duplication and spikes) accessible for all analytical results?			Not observed by on-site auditor.

VI.. Summary

A. Summary Checklist (page 1 of 2)

ITEM	YES	NO	COMMENT
Do responses to the evaluation indicate that project and supervisory personnel are aware of QA/QC and its application to the project?	X		
Do project and supervisory personnel place positive emphasis on QA/QC?	X		
Have responses with respect to QA/QC aspects of the project been open and direct?	X		
Has a cooperative attitude been displayed by all project and supervisory personnel?	X		
Does the organization place the proper emphasis on quality assurance?	X		
Have any QA/QC deficiencies been discussed before leaving?	X		
Is the overall quality assurance adequate to accomplish the objectives of the project?	X		
Have corrective actions recommended during previous evaluations been implemented? If not, provide details in Section VII.B		X	Most have been implemented. Those listed on page 20 have not been done.
Are any corrective actions required? If so, list the necessary actions below.	X		See section A, page 5 for a list of actions.

B. Summary Comments and Corrective Actions (page 2 of 3)

The following items were noted during the on-site and were similar or identical to requests made following the previous on-site evaluation.

1. The analyst preparing standards should mark the initial level of the solution on the container. This same request was noted in the previous on-site evaluation.

2. Balances used to weigh samples should be calibrated with a weight in the same range as the size of a typical sample aliquot. In the previous on-site, the use of balance logs had just begun. The laboratory implemented a procedure for checking the calibration of the balanced, but did not implement it correctly.

DIOXIN DATA AUDIT REPORT

Laboratory: ETC Corporation Case/Batch: 8600/DB0355, DB0356

Region: 2 Number of Samples: 22 IFB/SAS: 68-01-7366

Date Received: 12/17/87 Date Audited: 2/23-25/88

Contract Revision Date: 9/86 Date Reviewed: 2/29/88

* Audit Plate revised 6/87.

		C=Critical	M=Major	m=minor
I.	Data Summary Form (B-1)			1
II.	Initial Calibration Summary (B-2)			1
III.	Routine Calibration Summary (B-3)			1
IV.	Quality Control Summary (B-4)			1
V.	Other Deliverables			
VI.	Calibration Quality Assurance Criteria			1
VII.	Identification Criteria			
VIII.	Native TCDD Spike Results			
IX.	Laboratory Duplicate Analysis Results			
X.	Blank Analysis Results			
XI.	PE Sample Results			
	Total Number of Defects			5

This translates into 0.5 Operational Defects
Operational Defects = (1.0 x Critical) + (0.3 x Major) + (0.1 x minor)

Reviewed by:

D.C. Pudvah for

G. L. Robertson
Scientific Supervisor
Lockheed Engineering and
Management Services Company
P.O. Box 15027
Las Vegas, NV 89114
Phone: (702) 734-3326

Initial Audit by:

Luis J. Contreras

L. J. Contreras
Associate Scientist

SUMMARY COMMENTS/CONCLUSIONS

ORIGINAL (Red)

Soil Samples

EPA Number	Lab ID
MB	
DB035514	
DB035515	
DB035516	
DB035517	
DB035518	
DB035519	
DB035520	
DB035521	
DB035522	
DB035523	
DB035523-N	
DB035524	
DB035614	
DB035614-D	
DB035615	
DB035616	
DB035617	
DB035618	
DB035619	
DB035620	
DB035621	

Abbreviations:

D = Laboratory duplicate
N = Native TCDD spike
MB = Method blank
PE = Performance Evaluation Sample
RR = Rerun
NA = Non applicable

C = Critical error
M = Major error
m = Minor error
G = General error
* = See Interpretation Notes on p.8

Contractual Comments:

MINOR ERRORS:

m1 The batch number was incorrect on all forms. The correct batch numbers should be DB0355 and DB0356.

m2 The RSD calculations were not based on the correct standard formula. The correct formula is: Standard Deviation $= \sqrt{\sum_{i=1}^{N} \frac{(Xi-X)^2}{N-1}}$

The formula used by the laboratory had "N" in the denominator and not "N-1".

General Comments:

G1 Sample DB035524 is a Region 2 PE sample. The spike concentration and acceptance windows are not available to the data evaluator.

G2 Sample results for DB035523 were not submitted because the internal standard recovery was zero. This sample is being reextracted and analyzed in another QC batch as stated in the case narrative. See Enclosure 1.

G3 The analysis date for the initial calibration was 2/6/87. The samples were analyzed 10 months later on 12/4 and 12/5/87.

G4 The laboratory did not follow the EPA rounding rules to report the mean RRF values on Form B-2.

G5 The laboratory was inconsistent in choosing surrogate peak areas between the initial calibration data and sample data. See Enclosures 6 and 7.

G6 The results for the percent recovery of the internal standard could not be duplicated. The internal standard recovery for samples MB, DB035515, DB035619 and DB035621 are below the advisory limit.

G7 The percent recovery of the spiked field blank was miscalculated. The reported value, 98%, and the correct value, 99%, are within criteria.

G8 The RPD was not calculated because 2,3,7,8-TCDD was not detected in the sample, DB035614, and the duplicate sample, DB035614D.

ENCLOSURES:

1. Case Narrative
2. Form I
3. Form II
4. Form III
5. Form IV
6. Surrogate chromatogram for CC1 analyzed on 2/6/87 at 01:10.
7. Surrogate chromatogram for DB035514

	Defect Type	NA	Yes	No	Summar Commen
I. DATA SUMMARY FORM (Form B-1) (Exhibit B, Sec. A, p. B-11)					
*A. Form submitted for each matrix and all samples included on form	M/m		x		
B. Header information (Lab, Case/Batch No., instrument ID, report date, column)	m			x	ml
C. EPA sample number with proper suffixes	m		x		
D. Extraction date and GC/MS Analysis Date and Time	m		x		
E. Weight (to nearest 10th of a gram)/ volume (to nearest 10th of a ml)	m		x		
F. Calculated concentration of 2,3,7,8-TCDD (in correct units) if detected. Use 3 significant figures if >10 µg/kg or 100 ng/L and 2 if less than these quantities	m		x		
G. If TCDD not detected (ND), report a MPC (Ex D, 12.2, p.D-28)	m		x		
H. Signal to Noise (S/N) of Surrogate	m		x		
I. Recovery of the Internal Standard	m		x		
J. Raw peak areas for m/z 259, 320, 322, 328, 332IS, 334IS, 332RS and 334RS	m		x		G5
K. Relative Response Ratios for 320/322, 332/334IS and 332/334RS	m		x		
L. No calculation or typographical errors on the Data Report Form	m		x		
II. INITIAL CALIBRATION SUMMARY (Form B-2) (Exhibit B, Sec. B, p B-15)					
*A. Form submitted for each instrument	M		x		
B. Header information (Lab, Case/Batch No., CC Solution Alternative, Instrument ID)	m			x	ml
C. GC/MS Analysis Date and Time	m		x		
D. Peak area for each ion : 259,320,322, 328, 332IS, 334IS, 332RS and 334RS	m		x		G5
E. Relative Response Ratios for 320/320, 332/334IS, and 332/334RS	m		x		
F. Relative Response Factors for the Native TCDD (RRFn) and the Internal Standard (RRFi)	m		x		
G. No calculation or typographical errors on Form B-3	m		x		

	Defect Type	NA	Yes	No	Summar Commen
III. ROUTINE CALIBRATION SUMMARY (Form B-3) (Ex. B, Sec. C, p. B-18)					
*A. Form submitted for each instrument and all PCS's and CCl's included on form	M		x		
B. Header Information (Lab, CC Solution Alternative, Case/Batch No, Instrument ID)	m			x	ml
C. GC/MS Analysis Date and Time					
D. Peak area for each ion : 259,320,322,			x		
328, 332IS, 334IS, 332RS and 334RS	m		x		
E. Relative Response Ratios for 320/320,					
332/334IS, and 332/334RS	m		x		
F. Relative Response Factors for the Native TCDD (RRFn) and the Internal Standard (RRFi)	m		x		
G. % Valley for PCS	m		x		
H. No calculation or typographical errors on Form B-3	m		x		
IV. QUALITY CONTROL SUMMARY (Form B-4) (Ex. B, Sec. D, p. B-20)					
*A. Form submitted for each batch	m		x		
B. Header information (Lab, Case/Batch No., Instrument ID)	m			x	ml
C. Sample numbers for fortified field blank and duplicate analysis	m		x		
D. Accuracy of fortified field blank spike	m		x		
E. Relative difference for the duplicate analysis	m		x		
F. No calculation or typographical errors on Form B-4	m		x		
V. OTHER DELIVERABLES (Ex. B, Index, p B-6)					
A. Case Narrative provided	M		x		
1. Analytical problems addressed	m		x		
2. Documentation problems addressed	m	x			
B. All quantitation reports and SIM mass chromatograms for calibration solutions and performance check solutions (one m for each missing document	m		x		
C. All quantitation reports and SIM mass chromatograms for samples, including QA samples (one m for each missing document)	m		x		
D. Chain of Custody and in-house laboratory control documents	m		x		

	Defect Type	NA	Yes	No	Summa Comme
VI. CALIBRATION QUALITY ASSURANCE CRITERIA					
A. Column Performance Check Solution (Ex. D, 9.2.6.1, p. D-17)					
1. Analyzed at proper frequency on all instruments	m		x		
2. Valley ≤25% between 2,3,7,8-TCDD and all other TCDD isomers	M		x		
3. Ratio of m/z 320 to m/z 322 between 0.67-0.9	M		x		
4. Ratio of m/z 332IS to m/z 334IS between 0.67-0.9	M		x		
B. Initial Calibration (Ex. D, 9.2.6.2, p. D-17)					
1. Standards at contract specified concentration ranges (Ex. D, 7.6, D-11-13)	M		x		
2. MS Sensitivity: S/N >2.5 for m/z 259,320,332, and 328 and S/N >10 for m/z 332 and 334	M		x		
3. Ratio of m/z 320 to m/z 322 between 0.67-0.9	M		x		
4. Ratio of m/z 332IS to m/z 334IS between 0.67-0.9	M		x		
5. Variation of the RRF for native 2,3,7,8-TCDD at each concentration not >10% RSD	M		x		
*6. RSD <10% for the 4 mean RRF's for $^{13}C_{12}$-2,3,7,8-TCDD	C/M		x		
*7. RSD <10% for the 4 mean RRF's for native 2,3,7,8-TCDD	C/M		x		
8. Calculations performed correctly	m			x	G4, I
C. Routine Calibration (Ex. D, 9.3.3, p. D-20)					
1. MS Sensitivity: S/N >2.5 for m/z 259,320,322 and 328 and S/N >10 for m/z 332 and 334	M		x		
2. Ratio of m/z 320 to m/z 322 between 0.67-0.9	M		x		
3. Ratio of m/z 332IS to m/z 334IS between 0.67-0.9	M		x		
*4. Relative Response Factor for native 2,3,7,8-TCDD must be within 10% of mean value established by the initial calibration analysis.	C/M		x		
5. Calculations performed properly	m		x		

	Defect Type	NA	Yes	No	Summar Commen
VII. IDENTIFICATION CRITERIA (Ex. D, 11.6, p. D-26)					
A. Retention time of sample component within 3 seconds of the retention time of $^{13}C_{12}$-2,3,7,8-TCDD (IS)	M		x		
B. Integrated ion currents for m/z 259, 320 and 322 maximize simultaneously	M		x		
C. MS Sensitivity: S/N >2.5 for m/z 259,320,322 and 328 and S/N >10 for m/z 332 and 334.	M		x		
D. Ratio of m/z 320 to m/z 322 between 0.67-0.9	M		x		
E. Ratio of m/z 332IS to m/z 334IS between 0.67-0.9	M		x		
F. Recovery of the internal standard within the advisory window of 40-120%	G		x		G6
G. Failure to report the concentration of any sample that meets all the criteria for positive identification	m		x		
H. If a positive sample is above the calibration range, 1 g reextracted	M		x		
I. If TCDD not detected, MPC calculated properly.	m		x		G2
J. If MPC > 1 µg/kl (soil) or 10 ug/L (water), sample reextracted and reanalyzed	M		x		
VIII. NATIVE TCDD SPIKE RESULTS (Ex. E, 4.2.2.3 p. E-4)					
A. One sample spiked at 1.0ppb per batch of 24 or fewer sample	M		x		
B. Recovery of native TCDD within 60-140%. If not, rerun sample (Ex. C, 2.2.5 p. C-3)	m		x		
C. Recovery properly calculated	m		x		G7
D. Retention time of native TCDD within 3 seconds of the retention time of the internal standard	m		x		
IX. LABORATORY DUPLICATE ANALYSIS (Ex. E, 5.11, p. E-4)					
A. One duplicate analysis per batch of 24 or fewer	M		x		
B. RPD for the analysis <50%	m	x			G8
X. BLANK ANALYSIS RESULTS (Ex. E, 4.1, p. E-2)					
A. At least one method blank analyzed per batch and per matrix of 24 or fewer samples	M		x		

ORIGINAL (Red)

	Defect Type	NA	Yes	No	Summ Comm
B. No contamination (i.e., no signal at m/z 259,320 or 322 >2% of m/z 332 within ±5 scans of the m/z 332 peak maximum)	M		x		
C. If contamination, associated positive samples reextracted and reanalyzed	C	x			
XI. PE SAMPLE RESULTS					
A. Concentration within acceptance windows	C	x			G]
B. No false positives reported	C	x			

Interpretation Notes:

IA. M if Form B-1 is not provided (all other catagories in I are NA). m for each sample not included on Form B-1, but raw data included.
IIA. If Form B-2 not provided, all other catagories in II are NA.
IIIA. If Form B-3 not provided, all other catagories in III are NA.
IVA. If Form B-4 not provided, all other catagories in IV are NA.
VI B6. If % RSD ≥ 20, error is C; if 10 to 20, error is M.
VI B7. If % RSD ≥ 20, error is C; if 10 to 20, error is M.
VI C4. If % RSD ≥ 20, error is C; if 10 to 20, error is M.

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027, TRENTON, N.J. 08625

JORGE H. BERKOWITZ, Ph.D.
DIRECTOR

(609) 292-5383

MEMORANDUM

TO: Andrew Fishman
Contract Administrator
Office of Quality Assurance

FROM: Michael W. Miller, Ph.D.
Office of Quality Assurance

Floyd Genicola
Environmental Scientist I
Office of Quality Assurance

SUBJECT: Audit Report, E.T.C. Corp. for Contract X-195

DATE: February 23, 1988

On February 10, 1988 the above personnel conducted an on-site audit of E.T.C. Corp., Edison, New Jersey. We met with John E. Farrell, Technical Manager, Karen Kotz, QA Director, June Baker, QA Coordinator and laboratory personnel to discuss analytical methods, quality assurance and instrumentation. We also reviewed a typical data package.

We recommend that E.T.C. Corp. performance for contract X-195 be rated conditionally accepted pending correction of data reporting deficiencies.

DEFICIENCIES

1. The Volatile Organic Analysis Blank reported with a sample (N.J.DEP, BC8488) is not the actual method blank analyzed previous to the sample set and within 12 hours. The blank reported in the data summary as the "method blank" is a screening blank analyzed a day earlier. The contract requires that the blank reported as the method blank be the actual blank analyzed with the sample. E.T.C. must report the actual method blank for every sample data summary.

E.T.C. must identify all N.J.DEP VOA samples analyzed in the E.T.C. screening program. New data summary sheets must be issued to the N.J.DEP project manager with the correctly associated method blank for each sample.

2. Current procedures for mass spectral interpretation for Nontarget or Tentatively Identified Compounds are deficient. Data reported for sample BC8488 contained incorrect compound identifications. Contract guidelines for interpretation of mass spectra must be followed. E.T.C must improve the mass spectral identifications made by interpretation specialists.

3. Analysts in the Inorganics Section are not initialing data sheets. Data tabulation sheets for all inorganic methods are filled in by hand. The analyst must initial and date each sheet.

4. The organics preparation supervisor stated that Task IV is being cleaned by GPC. Gel Permeation Chromatography cannot be used for N.J.DEP Task IV acid/base-neutral extractables. Gel permeation is only acceptable for pesticides/PCBs.

RECOMMENDATIONS

A. Changes in SOPs

1. S-P-0-058: Disposal of Unused Samples

Samples are retained according to the customer's need or contract. Sample disposal shall be with written permission of the customers project officer.

2. SM-0-100: Log in Procedure

a. N.J.DEP Chain of Custody Forms must be packed in every shuttle

b. Shuttles must be shipped to the site unless arrangements are made for pick-up by the N.J.DEP project manager.

3. Instrument and Method Detection Limits

A SOP for the determination of IDL's and MDL's is needed.

4. SOP's needed for the analysis of Petroleum Hydrocarbons in Solids and the analysis of TOX in Soils.

5. A complete set of corrected current SOP's should be sent to N.J.DEP-OQA by March 21.

ORIGINAL

B. Laboratory Evaluation

1. Trip Blanks

a. Trip blanks for organic analyses should be drawn from the same source as the Instrument Method Blanks.

b. The trip blanks should be dated so that it is traceable to instrument blanks.

2. CLP reporting forms for VOA surrogates and aqueous matrix spike data are dated Rev 7/85 whereas BNs are dated Rev. 1/87. E.T.C. should correct all forms to the current CLP IFB.

3. E.T.C. must control the VOA Method Blank contamination to less than the CRDL. Methylene chloride must be controlled to less than 5 ppb. This will be enforced unless the contract is amended.

4. Currently, the Total Ion Chromatograms for extractables are presented as a 4" x 4" chart. The complex TIC is very difficult to read. A two page presentation of the TIC is requested.

(OQA-LSS-008-11/87)

W JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF QUALITY ASSURANCE

PROFESSIONAL ANALYTICAL SERVICES CONTRACTS COMPLIANCE AUDIT
(ON-SITE ADMINISTRATIVE AUDIT)

Laboratory Name [illegible]

Address [illegible]

Telephone No. [illegible] Date of Audit [illegible]

Document No. OQA-LSS-025-2/88 Contract: X-195 X X-_____ RI/FS_____ Other: X-_____

TO THE AUDITOR: A check mark will be made next to the item number to indicate a deficiency. If an item is not evaluated a N/A will be placed in the remarks/comment area of the section not evaluated. Continuation sheets are authorized if required. All violations of N.J.A.C. 7:18 by a certified laboratory shall be repsorted to the Laboratory Certification Unit, DEP Office of Quality Assurance.

7.8.1/B ( ) Laboratory Operations were deficient in that:

7.8.1.1/B.1 ( ) The laboratory did not have sufficient properly qualified personnel commensurate with the workload and types of analyses required to be performed pursuant to the Regulations Governing Laboratory Certification and Standards of Performance (N.J.A.C. 7:18-2.7) or the most recent USEPA CLP IFB.

7.8.1.2/B.2 ( ) The laboratory did not have a Quality Assurance Officer (QAO) with at least one (1) year experience in laboratory quality assurance or quality control procedures and report directly to the laboratory manager (director) or higher level of management in the same chain of command.

7.8.2/B.3-10 ( ) Laboratory Personnel Requirements

7.8.2.1/B.3 ( ) The GC Operator did not have at least nine (9) months experience in the operation of a GC on environment samples. N.J.A.C. 7:18-2.7(b)1

REMARKS: _____

7.8.2.2/B.4 ( ) The GC/MS Operator did not complete a formal training course in GC/MS and have at least nine (9) months experience in the operation of the GC/MS data system on environmental samples. N.J.A.C. 7:18-2.7(b)2

REMARKS: _____

7.8.2.3/B.5 ( ) The Extraction/Concentration Specialist did not have at least one (1) year experience in the preparation of extracts from environmental samples. N.J.A.C. 7:18-2.79b)3

REMARKS: _____

7.8.2.4/B.6 ( ) The Purge and Trap Specialist did not have at least six (6) months experience employing the purge and trap technique for volatile organic analysis. N.J.A.C. 7:18-2.7(b)4

REMARKS: _____

7.8.2.5/B.7 ( ) The Pesticide and Herbicide Residue Specialist did not have at least two (2) years experience in Organochlorine/Organophosphorous pesticide, herbicide and PCB analysis including method specified cleanup procedures (i.e. column chromotography) on evironmental samples. N.J.A.C. 7:18-2.7(b)5

REMARKS: _____

7.8.2.6/B.8 ( ) The Mass Spectral Interpretation Specialist did not have at least two (2) years experience in the interpretation of mass spectra generated from GC/MS analysis of environmental samples. N.J.A.C. 7:18-2.7(b)6

REMARKS: _____

7.8.2.7/B9 ( ) The Atomic Absorption Spectrometer Operator did not have at least six (6) months experience in the operation of atomic absorption equipment. N.J.A.C. 7:18-2.7(b)7

REMARKS: _____

7.8.2.8/B10 ( ) The Inductively Coupled Plasma Operator did not have at least nine (9) months experience in the operation of ICP equipment. N.J.A.C. 7:18-2.7(b)8

REMARKS: _____

7.8.2.9 ( ) The Phase Contrast Microscopist did not have at least one (1) year experience in the operation of a phase contrast microscope (PCM) or has not completed a formal training course in the operation of the PCM and associated equipment.

REMARKS: _____

7.9/C ( ) **Equipment Requirements were deficient in that:**

7.9.1/C.2 ( )a The laboratory participating in Tasks I, II, III, V, VI, and VII or non USEPA CLP laboratory participating in RI/FS projects did not meet and maintain the minimum standards for laboratory nstrumentation set forth in the Regulation Governing Laboratory Certification and Standards of Performance, N.J.A.C. 7:18-1.1 et seq.

( )b The laboratory did not meet and maintain the equipment requirements set forth in the analytical method bid.

( )c The laboratory did not maintain for archival storage of all data, except for GC/MS a bound, paginated and signature certified notebook.

REMARKS: _____

7.9.2/C.1 ( )a The laboratory participating in Task IV or a CLP laboratory performing in RI/FS projects did not meet and maintain the minimum standards for laboratory instrumentation set forth in the most recent USEPA CLP IFB document. OK

( )b The laboratory did not maintain for archival storage of all data, except GC/MS, a bound paginated and signature certified notebook.

REMARKS: _____

7.9.3/CLP ( ) **Additional Requirement for GC/MS Analyses—All Tasks, were deficient in that:** OK

7.9.3.1 ( ) The mass spectrometer was not equipped with a computerized MS library search system capable of providing reverse searching for targeted analytes and forward searching for non-targeted analytes. Software_____ No. of Library Entries_____

7.9.3.2 ( ) For archival storage of all GC/MS data the laboratory did not maintain a nine (9) track magnetic tape system capable of archival storage of all data obtained in a form that can be retrieved on line to the data system.

7.9.3.3 ( ) The storage medium was not maintained under secure and appropriate conditions to preclude to prevent loss of data.

REMARKS: _____

7.9.3.4 ( ) A permanent service record was not maintained in a logbook for each analytical instrument and ancillary equipment.

REMARKS: _____

7.9.3.5 ( ) An analytical instrument has been modified in an unacceptable manner.

REMARKS: _____

7.9.3.6 ( ) An analytical instrument was not adequately or properly vented.

REMARKS: _____

7.9.3.10 ( ) Calibration intensity and gains were not kept in a permanent logbook for all calibrated instruments.

REMARKS: _____

7.9.3.11 ( ) Analytical balances were not calibrated within one (1) year by a certified technician. N.J.A.C. 7:18-4.7(e)1

REMARKS: _____

7.9.3.12 ( ) Hood(s) were not in functional condition, flow rate monitored, and recorded in a logbook as required by N.J.A.C. 7:18-4.2(d).

REMARKS: _____

7.9.3.13 ( ) The conductivity/resistivity of distilled or demineralized laboratory water was not routinely checked and recorded in a permanent logbook. N.J.A.C. 7:18-4.6(b)

REMARKS: _____

7.9.3.14 ( ) Analytical balances were not checked daily with the appropriate range of class S weights and the results recorded in a permanent logbook. N.J.A.C. 7:18-4.6(k)

REMARKS: _____

7.9.3.15 ( ) The instrument manufacturer's operating manual was not readily available to the operator.

REMARKS: _____

7.9.3.16 ( ) The laboratory cannot document any preventative maintenance program (internal or contracted) for analytical instruments and allied equipment.

REMARKS: _____

7.10/CLP ( ) Sample Handling was deficient in that:

7.10.1 ( ) The appropriate portion of the laboratory SOP was unavailable to the sample custodian in the sample receipt area.

7.10.2 ( ) The appropriate portion of the laboratory SOP was unavailable to the analyst.

7.10.3 ( ) The employees of the laboratory were not following the laboratory SOP as written.

REMARKS: _____

7.10.4 ( ) Sample shipping containers were opened in a manner which did not prevent possible contamination of the laboratory or other samples.

REMARKS: _____

7.10.5 ( ) Aqueous samples (Tasks II and VI) were not preserved in accordance with the most recent 40 CFR 136 (water/wastewater) or 40 CFR 141 (drinking water).

REMARKS: _____

7.10.6 ( ) Samples collected and submitted under Task IV or submitted as part of a RI/FS project did not comply with the sample holding and preservation requirements of the most recent USEPA CLP IFB document. OK

REMARKS: _____

7.10.7 ( ) Non-aqueous soil, sediment, and sludge samples (Non-CERCLA, Tasks III and IV) were not stored at 4.0 degrees C.

REMARKS: _____

7.10.8 ( ) Adequate facilities were not provided for the storage of samples.

REMARKS: OK _____

7.10.9 ( ) The temperature of the cold storage areas was not monitored daily and recorded in a permanent logbook. N.J.A.C. 7:18-4.7(e)6

7.10.11 ( ) Temperature excursions (+/-4.0 deg. C) were noted. No corrective action was indicated.

7.10.12 ( ) The sample receipt/temperature records were not maintained in a appropriate manner.

REMARKS: _____

7.10.13 ( ) The laboratory was not maintained in a clean and organized manner.

7.10.14 ( ) Contamination free areas were not provided for trace level analytical work.

7.10.15 ( ) Reference materials were not labeled with concentrations, date of preparation, and the identify of the individual who prepared references or were not traceable in a permanent logbook. Reference standards were not stored separately from samples. [illegible]

7.10.16 ( ) The laboratory did not possess a limited access, chemically isolated area for high hazard work such as dioxin or mixed waste. [illegible]

7.10.17 ( ) The chemical waste disposal policies/procedures are not being followed or are inadequate.

REMARKS: ck

7.12.2 ( ) **Requirements for Aqueous Sample Analysis**

7.12.2.1 ( ) Purgeable Organics by GC (EPA 601, 602, and 603) is deficient in that:

7.12.2.2 (X) Purgeable Organics by GC/MS (EPA 624) is deficient in that:

Methylene chloride contamination [illegible]

7.12.2.3 ( ) Extractable Organics (except pesticides and PCBs) by GC (EPA 604, 607, 609, 610, 611, and 612) was deficient in that:

7.12.2.4 ( ) Extractable Organics by GC/MS (EPA 625) was deficient in that:

7.12.2.5 ( ) Pesticide and PCB Analysis (EPA 608) was deficient in that:

7.12.2.6 ( ) 2,3,7,8-Tetrachlorodibenzo-p-dioxin (EPA 613 Analysis and/or 625 Screen) was deficient in that:

7.12.2.7 (X) Metal Analysis by Flame AA and/or ICP was deficient in that:

Metals Data tables are Handwritten, Date and initials of [illegible] filling out and [illegible] must be on Data Sheets.

7.12.2.8 (X) Metal Analysis by Furnace AA was deficient in that:

Same as 7.12.2.7

7.12.3 ( ) **Requirements for Non-Aqueous Samples** OK

7.12.3.1 ( ) Purgeable Organics by GC (SW-846 Methods 8010, 8020, and 8030) were deficient in that:

7.12.3.3 ( ) Extractable Organics by GC <u>except Pesticides and PCBs</u> (SW-846, 8040, 8060, 8090, 8100, and 8120) were deficient in that:

7.12.3.4 ( ) Extractable Organics by GC/MS <u>except pesticides and PCBs</u> (SW-846 8250 and 8270) were deficient in that:

7.12.3.5 ( ) Pesticide/PCB Analysis by GC (SW-846 8080) was deficient in that:

7.12.3.6 ( ) Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans (SW-846 8280) was deficient in that:

7.12.3.7 ( ) Metal Analysis was deficient in that the requirement of Secuon 7.12.2.8 were not met as follows:

7.12.4 ( ) **Requirement for USEPA CLP Analysis (Task IV and RI/FS Projects) were defieient in that:**

7.12.4.1/ CLP ( ) The laboratory did not comply with the QC/QA requirements of the most recent CLP IFB document. OK

7.12.4.2/ CLP (X) The laboratory did not use the methodology from the most recent CLP IFB document.

NJDEP does not permit the use of [illegible]

7.12.4.3 ( ) The additional requirements for dioxin as set forth in Sections 7.12.6 and 7.12.7 of the RFP were not met.

7.12.4.4 (X) The reagent blank requirements as set forth in Sections 7.12.6.2f, 7.12.6.4f, 7.12.7.2e, and 7.12.7e were not met.

Methylene Chloride and Acetone were detected [illegible]

7.12.6 ( ) **Requirements for Aqueous Samples (Task VI)**

7.12.6.1 ( ) Purgeable Organics by GC (EPA 601, 602, and 603). The method specified QA/QC requirements and the general requirements of Secuon 7.12.1 of the RFP were not met.

7.12.6.2 ( ) Purgeable Organics by GC/MS (EPA 624 Modified) was deficient in that:

7.12.6.3 ( ) Extractable Organics (except pesticides and PCBs) by GC (EPA 604, 606, 607, 609, 610, 611, and 612) were deficient in that:

7.12.6.4 ( ) Extractable Organics by GC/MS (EPA 624 Modified) was deficient in that:

7.12.6.5 ( ) Pesticide and PCB Analysis (EPA 608 Modified) was deficient in that:

7.12.6.6 ( ) 2,3,7,8-Tetrachlorodibenzo-p-dioxin (EPA 613 and 625) were deficient in that the requirements set forth in Section 7.12.6.6 of the RFP were not met.

7.12.6.7 ( ) Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (C/4 through C/8 congeners, SW-846 Method 8280, 40 CFR 261, Appendix X, 6 October 86) was deficient in that:

7.12.6.8 ( ) Metal analysis by Flame AA and ICP was deficient in that:

7.12.6.9 ( ) Metal analysis by Furnace AA was deficient in that:

7.12.7 ( ) **Requirements for Non-aqueous Samples (Task VII)** OK

7.12.7.1 ( ) Purgeable Organics by GC (SW-846 8010, 8020, and 8030) were deficient in that:

_____
_____
_____
_____

7.12.7.2 ( ) Purgeable Organics by GC/MS (SW-846 8240 Modified) were deficient in that:

_____
_____
_____
_____

7.12.7.3 ( ) Extractable Organics by GC (except Pesticides and PCBs), SW-846 8040, 8060, 8090, 8100, and 8120) were deficient in that:

_____
_____
_____
_____

7.12.7.4 ( ) Extractable Organics by GC/MS (except Pesticides and PCBs), SW-846 8250 and 8270 Modified) were deficient in that:

_____
_____
_____
_____

7.12.7.5 ( ) Pesticide/PCB Analysis (SW-846 8080 Modified) was deficient in that:

_____
_____
_____
_____

7.12.7.6 ( ) 2,3,7,8-Tetrachlorodibenzo-p-dioxin Analysis USEPA CLP IFB WA84-A002, 12/30/83 or the latest revision was deficient in that:

_____
_____
_____
_____

7.12.7.7 ( ) Polychlorinated Dibenzo-p-dioxins ans polychlorinated Dibenzofurans (C1/4 through C1/8 congeners), SW-846 Method 8280, 40 CFR 261, Appendix X, 6 October 86 was deficient in that.

_____
_____
_____

7.12.7.8 ( ) Metal analysis was deficient in that the requirements set forth in Sections 7.12.6.8 and 7.12.6.9 of the RFP were not met.

7.13/CLP ( ) **Chain of Custody Requirements—All Tasks and Projects N.J.A.C. 7:18-2.15**

7.13.1 ( ) The chain of custody employed by the laboratory did not comply with the requirements set forth in Section 7.13 of the RFP as indicated below:

7.14/CLP ( ) **General Remarks:**

Name *(Print)*:

Signature:

Title:

Form DWR 15
12 86

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

ORIGINAL (Red)

LABORATORY PERSONNEL

LABORATORY CERTIFICATION NUMBER _____ DATE OF EVALUATION _____

LABORATORY _____

ADDRESS _____ PHONE _____

NAME AND TITLE	EDUCATION		NO. OF YEARS EXPERIENCE IN ENVIRONMENTAL TESTING	PRIMARY RESPONSIBILITY
	DEGREE (PhD, MS, BS, BA, Assoc., HS)	MAJOR		

Total ft² of lab space _____

Total linear feet of lab bench _____

Inspected by _____

Manager's Signature _____

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON SITE LABORATORY EVALUATION

LABORATORY EQUIPMENT

TYPE OF EQUIPMENT	AVAILABLE YES	AVAILABLE NO	MANUFACTURER	MODEL	SERIAL #	COMMENTS
SERVICES						CSER
Light						
Electrical						
Gas						
Central Vacuum						
Secured Space						
Air Conditioning						
LABORATORY WATER SUPPLY:						CLWT
Distilled						
Double Distilled						
Deionized						
CHEMICAL STORAGE:						CSTO
Volatile, Carcinogenic & Flammable						
Acids						
Housekeeping						CHOK
EQUIPMENT						CVGL
Glassware (Class A volumetric						
Pipets						
Burets						
Flasks						
Analytical Balance			[illegible]	[illegible]	[illegible]	
Pan Balance						
Top Loading Balance						
D.O. Meter						
pH Meter						
Buffer pH4__ pH7__ pH10__						
Specific Ion Meter						
Conductivity Meter						
Amperometric Unit						
Turbidimeter	✓		HACH KATIC	XR	870100232	
Spectrophotometer (U.V.-VIS.)	✓		[illegible] HACH		8H1101133	U.D-Vis.
Spectrophotometer (I.R.)	✓		PE	21	7C7A94	
Filter Photometer						
Flame Photometer						
Mercury Analyzer	✓					
Auto Analyzer	✓		[illegible]			[illegible]
Class S Weights						
NBS Thermometer						
Total Organic Carbon Analyzer						CWGT
IR Detector						CTHM
FID Detector						
TOX Analyzer						
BOD Incubator						
Ion Chromatograph						
Microbio Incubator						
44.5°C Waterbath						
Autoclave						

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LABORATORY EQUIPMENT (continued)

TYPE OF EQUIPMENT	AVAILABLE YES	AVAILABLE NO	MANUFACTURER	MODEL	SERIAL #	COMMENTS
180°C Oven						
Atomic Absorption						
Plasma Spectrometer						
DCP						
ICAP						
Gas Chromatograph						
Refrigerator						
Freezer						
Drying Oven						
Muffle Furnace						
Hot Plates						
Magnetic Stirrer						
Desiccators						
Steam Bath						
Stirred Boiling Water Bath with Gabled Lid for Nitrate by Brucine Method						
Centrifuge						
LABORATORY APPARATUS						
Fluoride Distillation						
COD ~~Reflux~~						
Kjeldahl						
Kjeldahl Digester						
Cyanide Distillation						
Soxhlet Extraction						
LABORATORY SAFETY:						
Emergency Exits						
Fire Alarm						
Smoke Detector						
Sprinkler System						
Fire Extinguishers						
Fire Blanket						
Emergency Lights						
First Aid Station						
Emergency Phone Numbers						
Hazardous Materials Chart						
Eye Wash Stations						
Chemical Burn Stations						
Safety Shower						
Lab Coats						
Safety Glasses						
Face Shield						
Respirator with Compressed Air Supply						
Fume Hoods						
Perchloric Acid Hood						
Compressed Gas Tanks Secured						
Electrical Cables Secured						
Is there an antidote for HF burns? e.g. A paste of MgO and Glycerol and a saturated solution of $MgSO_4$						

Form DWR-1ST-A
8/88

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON SITE LABORATORY EVALUATION

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
ACIDITY					
1 Are sample containers filled completely?	☐	☐	☐	CACD 01	
2 Are samples analyzed within 14 days of collection?	☐	☐	☐	CACD 02	
3 Is the NaOH titrant standardized against potassium biphthalate and labeled properly?	☐	☐	☐	CACD 03	
4 Are wastewater samples titrated to pH 8.3 using an electrometric endpoint?	☐	☐	☐	CACD 04	
5 If a phenolphthalein indicator is used, is free residual chlorine removed with thiosulfate?	☐	☐	☐	CACD 05	
ALKALINITY					
1. Are sample containers filled completely?	☐	☑	☐	CALK 01	
2. Are samples analyzed within 14 days of collection?	☐	☑	☐	CALK 02	
3 Is the H_2SO_4 or HCl standardized against Na_2CO_3 and labeled properly?	☐	☑	☐	CALK 03	
4 Are wastewater samples titrated to pH 4.5 using an electrometric endpoint?	☑	☐	☐	CALK 04	
5. If methyl orange indicator is used, is free residual chlorine removed with thiosulfate?	☐	☑	☐	CALK 05	
BIOCHEMICAL OXYGEN DEMAND					
1. Are samples cooled to 4°C during transit and received in lab within 48 hrs of collection?	☐	☐	☐	CBOD 01	
2 Is the sodium thiosulfate standardized against potassium biniodate or potassium dichromate and labeled properly?	☐	☐	☐	CBOD 02	
3 Is a seed used on chlorinated or industrial effluents?	☐	☐	☐	CBOD 03	
4. Is the depletion of unseeded dilution water blank less than 0.2 mg/l?	☐	☐	☐	CBOD 04	
5. Do the sample dilutions used to compute the BOD have depletions of at least 2 mg/l and a residual DO of 1 mg/l?	☐	☐	☐	CBOD 05	
6 Is a glucose-glutamic acid standard included with approximately every 20 analyses?	☐	☐	☐	CBOD 06	
7. Is the BOD incubator thermometer graduated in intervals of 1°C or smaller?	☐	☐	☐	CBOD 07	
8. Is chlorine removed with sodium sulfite?	☐	☐	☐	CBOD 08	
9. How many dilutions are prepared to determine BOD?					1☐ 2☐ 3☐ 4☐ 5☐
CHEMICAL OXYGEN DEMAND (Holding 28 Days)					
1. Are samples preserved with H_2SO_4 to a pH to 2?	☐	☑	☐	CCOD 01	
2 Upon receipt in the laboratory, is the sample pH measured and recorded to verify that it is preserved?	☐	☑	☐	CCOD 02	
3. Is the Dichromate reflux method used?					
a. Is the ferrous ammonium sulfate titrant standardized daily against primary standard grade $K_2Cr_2O_7$?	☐	☐	☐	CCOD 03	
b. Is 0.025 N $K_2Cr_2O_7$ used for samples below 50 mg/l?	☐	☐	☐	CCOD 04	
c. Is a blank run with each set of samples?	☐	☐	☐	CCOD 05	
d. Is at least 0.5 ml of titrant used in the titration of the excess dichromate for the majority of samples	☐	☐	☐	CCOD 06	
e. Is $HgSO_4$ used to complex chloride?	☐	☐	☐	CCOD 07	
4. Is the automated colorimetric method used?	☐	☐	☐	CCOD 08	
5. Is the manual colorimetric method used?	☐	☑	☐		
a. Are digestion tubes heated in a block heater or oven at 150°C for 2 hrs.?	☐	☑	☐		
b Is absorbance read @ 600 nm in a spectrophotometer?	☐	☑	☐		

AR300792

Form DWR-153 B
5 85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LIMITED CHEMISTRY GENERAL PROCEDURES

ORIGINAL (Red)

	NA	YES	NO		COMMENTS
HARDNESS TOTAL (Holding 6 mos.)					
1. Are samples preserved with acid (HNO_3 or H_2SO_4) to pH<2?	☐	☐	☐	CHRD 01	
2. Is the EDTA titrimetric method used?					
a. Is the EDTA titrant standardized against $CaCO_3$ and labeled properly?	☐	☐	☐	CHRD 02	
b. Is the EDTA titrant approximately 0.01M?	☐	☐	☐	CHRD 03	
3. Is the automated colorimetric (calmagite) method used?	☐	☐	☐		
4. Is the hardness calculated from Ca+Mg values determined by atomic absorption?	☐	☐	☐		
HYDROGEN ION (pH) (Analyze immediately)					
1. Is an electronic pH meter with temperature compensation used?	☐	☐	☐	CpH 01	
2. Are electrodes stored according to the manufacturer's recommendations?	☐	☐	☐	CpH 02	
3. Are the electrodes filled with sufficient quantity of electrolyte?	☐	☐	☐	CpH 03	
CONDUCTIVITY (Holding 28 Days)					
1. Are samples measured at 25°C or is a temperature correction made?	☐	☐	☐	CCON 01	
2. Has the cell constant of the conductance cell been determined and permanently recorded?	☐	☐	☐	CCON 02	
METHYLENE BLUE ACTIVE SUBSTANCES (Holding 48 Hrs.)					
1. Is MBAS being determined by the methylene blue method?	☐	☐	☐	CMBA 01	
2. Is LAS reference material available and used in the preparation of standards?	☐	☐	☐	CMBA 02	
3. Is the determination of absorbance done at 652 nm against a blank of chloroform?	☐	☐	☐	CMBA 03	
TURBIDITY (Holding 48 Hrs.)					
1. Is the nephelometric method used?					
a. Are samples with turbidity greater than 40 NTU diluted with turbidity-free water?	☐	☑	☐	CTUR 01	
b. Are sample tubes clear, colorless glass which are clean and have no scratches?	☐	☑	☐	CTUR 02	
COLOR (Holding 48 Hrs.)					
1. Is the visual comparison method used?					
a. Is interference due to turbidity removed by filtration or centrifugation?	☐	☐	☐	CCOL 01	
b. Is the pH of the sample measured and reported with the result?	☐	☐	☐	CCOL 02	
c. Are platinum-cobalt standards used?	☐	☐	☐	CCOL 03	
d. Are color disc standards calibrated against platinum-cobalt standards every 6 months?	☐	☐	☐	CCOL 04	
2. Is the spectrophotometric method used?	☐	☐	☐		
the ADMI method used?	☐	☐	☐		

AR300793

Form DWR-153 C
5 85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LIMITED CHEMISTRY GENERAL PROCEDURES

	N/A	YES	NO		COMMENTS
RESIDUE, (T.D.S.), (TOTAL FILTERABLE RESIDUE) (Holding 48 Hrs.)					
1. Does the desiccator have suitable dessicant and indicator?	☐	☑	☐	CTDS 01	
2. Is an analytical balance capable of weighing to 0.1 mg available?	☐	☑	☐	CTDS 02	
3. Are glass fiber filter discs used?	☐	☑	☐	CTDS 03	
4. Are samples for total dissolved solids dried at 180°C?	☐	☑	☐	CTDS 04	
5 a. Does the dissolved residue, when weighed, yield <200 mg?	☐	☑	☐	CTDS 05	
b. If not, is smaller aliquot used?	☐	☐	☐	CTDS 06	
RESIDUE, (TSS), (TOTAL NONFILTERABLE RESIDUE) (Holding 7 Days)					
1. Is the residue dried at 103-105°C?	☐	☑	☐	CTSS 01	
RESIDUE, TOTAL SOLIDS (Holding 7 Days)					
1. Is sample dried at 103-105°C until weight is constant?	☐	☑	☐		
CHLORIDE (No Pres., Holding 28 Days)					
1. Is the argentometric (silver nitrate) method used?					
a. Is the $AgNO_3$ titrant standardized against NaCl dried at 140°C and labeled properly?	☐	☐	☐	CCLD 01	
b. Is interference due to sulfide, sulfite or thiosulfate removed with H_2O_2?	☐	☐	☐	CCLD 02	
2. Is the mercuric nitrate method used?					
a. Is the pH adjusted to 2.5?	☐	☐	☐	CCLD 03	
b. Is a 1 or 5 ml microburet used for titration?	☐	☐	☐	CCLD 04	
c. Is the NaCL standard dried at 600°C for 1 hour?	☐	☐	☐	CCLD 05	
3. Is the automated ferricyanide method used?	☐	☐	☐		
4. Is the ion chromatographic method used for drinking water?	☐	☐	☐		
FLUORIDE (No Pres., Holding 28 Days)					
1. Are water samples distilled?	☐	☐	☐	CFLR 01	
2. Is the specific ion electrode method used?					
a. Are both samples and standards analyzed at room temperature?	☐	☐	☐	CFLR 02	
3. Is the SPADNS method used?					
a. Is the SPADNS solution stored in an amber bottle and protected from direct sunlight?	☐	☐	☐	CFLR 03	
b. Is sodium arsenite used to remove residual chlorine?	☐	☐	☐	CFLR 04	
4. Is the automated complexone method used?					
a. Is the working color reagent prepared fresh every 3 or 4 days?	☐	☐	☐	CFLR 05	
CHLORINE RESIDUAL (No Pres., No Holding)					
1. a. Is chlorine residual determined by iodometric titration, DPD colorimetric or DPD titrimetric meth[illegible]?	☐	☐	☐	CCLR 01	
b. In the iodometric titration is the excess rec[illegible]g agent back-titrated with iodine or iodate solution?	☐	☐	☐	CCLR 02	
c. In the DPD colorimetric method are kits wit[illegible]olor wheels, and reagent packets used?	☐	☐	☐		
d. Is the chlorine residual determined by specific ion electrode?	☐	☐	☐		
e. Is the starch end-point method used?	☐	☐	☐		

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY PROCEDURES

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
SULFATE – Continued					
2 b. Are both samples and standards read at 5 ± 0.5 minutes after stirring?	☐	☐	☐	CSFA 05	
c. Are blanks used to correct for color or turbidity?	☐	☐	☐	CSFA 06	
3. Is the automated chloranilate method used?					
a. Are interferences due to Ca, Al, and Fe removed by an ion exchange column?	☐	☑	☐	CSFA 07	
4. Is the ion chromatography method used for drinking water?	☐	☑	☐		
SULFIDE (Pres. - 4°C,Zn Acetate + NaOH to pH>9 - Holding 7 Days)					
1. Is the Methylene Blue method used?					
a. Is the methylene blue solution standardized against a known solution and adjusted so that 1 drop = 1.0 mg/l sulfide?	☐	☐	☐	CSFD 01	
b. Is the titrimetric (Iodine) method used?	☐	☐	☐	CSFD 02	
SULFITE (No Preservation)					
1. Is the titrimetric iodine-iodate method used?					
2. Are samples analyzed on site?	☐	☐	☐	CSFT 01	
CYANIDE					
1. Are samples analyzed within 14 days of collection?	☐	☐	☐	CCYN 01	
2. Are samples preserved with NaOH to pH 12 + 0.6 G ascorbic acid?	☐	☐	☐	CCYN 02	
Upon receipt in the laboratory, is the pH measurec and recorded?	☐	☐	☐	CCYN 03	
4. If chlorinated, do you remove sulfide as Cd sulfide?	☐	☐	☐	CCYN 04	
5. Is a manual distillation with $MgCl_2$ done?	☐	☐	☐		
6. Is the titrimetric method used?	☐	☐	☐	CCYN 05	
a. Is the $AgNO_3$ standardized against NaCl and labeled properly?	☐	☐	☐	CCYN 06	
b. Is a blank run with each set of samples?	☐	☐	☐	CCYN 07	
7. Is the colorimetric method used?					
a. Is Chloramine T prepared weekly and stored in refrigerator?	☐	☐	☐	CCYN 08	
b. Is the stock cyanide solution standardized weekly against $AgNO_3$?	☐	☐	☐	CCYN 09	
OIL AND GREASE (Holding 28 Days)					
1. Are samples collected in glass containers?	☐	☑	☐	CONG 01	
2. Are samples preserved with H_2SO_4 to pH<2?	☐	☑	☐	CONG 02	
3. Is a liquid-liquid extraction with freon used?	☐	☑	☐	CONG 03	
4 Is the oil and grease content determined gravimetrically?	☐	☑	☐	CONG 04	
PHENOLS (Holding 28 Days)					
1. Are samples collected in glass containers?	☐	☐	☐	CPHN 01	
2. Are samples preserved with H_2SO_4 to pH<2?	☐	☐	☐	CPHN 02	
3. Upon receipt in the laboratory, is the pH measured and recorded?	☐	☐	☐	CPHN 03	
Are samples analyzed within 28 days of collection?	☐	☐	☐	CPHN 04	
the colorimetric 4AAP method with distillation used?	☐	☐	☐	CPHN 05	
6. Is the colorimetric 4AAP method for halogenated phenols used or Is U.S.E.P.A. Method 604 used?	☐	☐	☐	CPHN 06	

Form DWR 156
5 88

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH
ON-SITE LABORATORY EVALUATION

RECORD-KEEPING AND CALIBRATION PRACTICES

RECORD-KEEPING	NA	YES	NO		COMMENTS
1. Is the temperature of all B.O.D. incubators recorded daily?	☐	☐	☐	CREC 01	
2. Is the temperature of all drying ovens recorded daily?	☐	☑	☐	CREC 02	
3. Is the temperature of all refrigerators recorded daily?	☐	☐	☐	CREC 03	
4. Are the laboratory thermometers calibrated against an NBS traceable thermometer and documented?	☐	☑	☐	CREC 04	
5. Is the analytical balance checked monthly with two class S weights, one in the mg range, and one in the gram range, and the data recorded?	☐	☑	☐	CREC 05	
6. Is a record available of yearly service on the analytical balance?	☐	☑	☐	CREC 06	
7. Is the pH meter checked daily, or before use, by setting the meter to pH7 then measuring and recording pH's approximately 4 and 10?	☐	☐	☐	CREC 07	
8. Is the conductivity of the distilled water supply (satisfactory is conductivity of 2.0-0.5 umho/cm. at 25°C.) checked daily and the data recorded?	☐	☐	☐	CREC 08	
9. Is the conductivity meter calibrated daily against a 0.001 M KCl solution and the data recorded?	☐	☐	☐	CREC 09	
10. Is the turbidimeter calibrated daily, or before use, with a 40 NTU formazin standard and the data recorded?	☐	☑	☐	CREC 10	
11. Is the DO meter calibrated weekly against the Winkler method and the data recorded?	☐	☐	☐	CREC 11	

CALIBRATION PRACTICES

1. Regarding calibration curves, are the following practices in use?					
a. Graph is labeled with parameter, date of calibration and the axes are properly identified as to absorbance or percent transmission and concentration units.	☐	☐	☐	CCAL 01	
b. Computer read-out for regression analysis lists parameter, date of calibration, equation of curve and correlation co-efficient.	☐	☐	☐	CCAL 02	
c. Results reported are within the range of the highest and lowest standard.	☐	☐	☐	CCAL 03	
2. Regarding manual spectrophotometric calibration curves, are the following practices in use?					
a. A minimum of 5 standards and a blank, with 3 measurements at each point are used to generate the curve.	☐	☐	☐	CCAL 04	
b. A new curve is generated every 6 months.	☐	☐	☐	CCAL 05	
c. The working curve is checked daily or with each run by alternating a low and a high standard and the data are recorded.	☐	☐	☐	CCAL 06	
3. Regarding calibration curves for auto-analyzer analyses, are the following practices in use?					
a. The baseline is set using appropriate reagents and distilled water and is checked at the end of the run.	☐	☐	☐	CCAL 07	
b. A minimum of 5 standards are used to generate the curve.	☐	☐	☐	CCAL 08	
c. A new curve is generated for each run.	☐	☐	☐	CCAL 09	
d. A marking standard is included with every 20 samples.	☐	☐	☐	CCAL 10	
e. The calibration curve is checked at the end of each run with a low and a high standard and the data are recorded.	☐	☐	☐	CCAL 11	
4. Regarding atomic absorption calibration curves, are the following practices in use?					
a. Working standards are prepared fresh with each run.	☐	☐	☐	CCAL 12	
b. A minimum of 4 standards and a blank are used to generate a curve.	☐	☐	☐	CCAL 13	
c. A new curve is generated for each run.	☐	☐	☐	CCAL 14	

Form DWR-157
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

QUALITY CONTROL AND DATA HANDLING

	NA	YES	NO		COMMENTS
QUALITY CONTROL					
1. Regarding standard solutions, are the following practices in use?					
a. A notebook record is available describing the preparation and standardization of stock standard solutions.	☐	☐	☐	CQCS 01	
b. Are purchased standards checked before use?	☐	☑	☐	CQCS 02	
c. Stock standard solutions and working standards are labeled with reagent, concentration, date prepared and initialed.	☐	☐	☐	CQCS 03	
d. ACS grade or analytical reagent grade chemicals dated when received, are used in the preparation of standard solutions.	☐	☐	☐	CQCS 04	
2. Regarding the monitoring of precision, are the following practices in use?					
a. Approximately 1 synthetic known control sample is included with every 20 analyses, and the data presented on an X bar control chart.	☐	☐	☐	CQCP 01	
b. Approximately 1 duplicate of a natural sample is included with every 20 analyses, and the data presented on an R bar range control chart.	☐	☐	☐	CQCP 02	
3. Regarding the determination of chemical recovery, are the following practices in use?					
a. A tabulation and control chart are available for recovery data obtained from spiked natural samples (1 for every 20 analyses).	☐	☐	☐	CQCP 03	
4. Is there an in-house quality control manual outlining Q.C. practices?	☐	☐	☐	CQCP 04	
DATA HANDLING					
1. Regarding sampling procedures and data handling, data reporting and data retrieval procedures, are the following practices in use?					
a. Are sample collectors supplied with properly labeled containers, preservatives and sampling instructions? (Get copy of instructions).	☐	☐	☐	CDAT 01	
b. Is there a lab daily work sheet listing sample number, date, time, location, preservation, analyses requested, field measurements by sampler, sampler's initials, date and hour received by lab, analysis, date and hour of analysis, analyst's initials?	☐	☐	☐	CDAT 02	
c. Is there a bound lab notebook for recording raw data, calculations, or other notes.	☐	☑	☐	CDAT 03	use data sheets
d. Is raw data kept for 5 years?	☐	☑	☐	CDAT 04	
e. Is enforcement data kept for 5 years?	☐	☑	☐	CDAT 05	
f. Is there an in-house methods manual available to all analysts?	☐	☑	☐	CDAT 06	
g. Is there a record of chain of custody?	☐	☐	☐	CDAT 07	
h. Is there a chain of custody procedure?	☐	☐	☐	CDAT 08	

Form DWR-151
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

ON-SITE LABORATORY EVALUATION

LABORATORY PERSONNEL

LABORATORY ENVIRONMENTAL TESTING & CERT [illegible] DATE OF EVALUATION 12/[illegible]

ADDRESS 284 RARITAN CENTER PHONE 225 67[illegible]

EDISON, N.J. 08837

NAME AND TITLE	EDUCATION DEGREE PhD, MS, BS, BA, Assoc., HS	EDUCATION MAJOR	NO. OF YEARS EXPERIENCE IN ENVIRONMENTAL TESTING	PRIMARY RESPONSIBILITY
[illegible] Schurer	B.S.	[illegible]	4	SUPERVISOR QA. [illegible] CERT [illegible]
[illegible]	M.S.	Env. Sci	[illegible]	[illegible] QA [illegible]
John Fitzgerald	Ph.D.	Anal. Chem.		MANAGER
[illegible]	M.S.	[illegible]		Supervisor QA/QC
[illegible]	B.S.		[illegible]	Supervisor [illegible]

Total ft² of lab space ~~[illegible]~~ 33600

Total linear feet of lab bench ________

Inspected by [illegible]

AR300798

Form DWR-152 A
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LABORATORY EQUIPMENT

TYPE OF EQUIPMENT	AVAILABLE YES	AVAILABLE NO	MANUFACTURER	MODEL	SERIAL #	COMMENTS
SERVICES:	✓					CSER ☐
Light	✓					
Electrical	✓					
Gas		✓				
Vacuum		✓				
Secured Space	✓					
Air Conditioning	✓					
LABORATORY WATER SUPPLY:						CLWT ☐
Distilled						
Double Distilled						
Deionized						
CHEMICAL STORAGE:	✓					CSTO ☐
Volatile Reagents	✓					
Acids	✓					
Carcinogenic Reagents	✓					
Flammable Reagents	✓					
EQUIPMENT:						CVGL ☐
Glassware (Class A volumetric)						
Pipets	✓					
Burets	✓					
Flasks	✓					
Analytical Balance		✓				
Pan Balance		✓				
Top Loading Balance	✓					
D.O. Meter	✓					
pH Meter	✓					
Buffer						
pH 4	✓					
pH 7	✓					
pH 10	✓					
Specific Ion Meter		✓				
Conductivity Meter	✓					
Amperometric Unit		✓				
Turbidimeter		✓				
Spectrophotometer	✓					
Filter Photometer		✓				
Flame Photometer		✓				
Mercury Analyzer						
Auto Analyzer	✓					
Class S Weights	✓					CWGT ☐
NBS Thermometer	✓					CTHM ☐
Total Organic Carbon Analyzer	✓					
ECD Detector	✓					
FID Detector						
TOX Analyzer	✓					
BOD Incubator						
Microbio Incubator						
44.5°C Waterbath						
Autoclave						

AR300799

Form DWR-152 B
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LABORATORY EQUIPMENT (continued)

TYPE OF EQUIPMENT	AVAILABLE YES	AVAILABLE NO	MANUFACTURER	MODEL	SERIAL #	COMMENTS
170°C Oven						
Atomic Absorption	✓					
Plasma Spectrometer	✓					
DCP						
ICAP						
Gas Chromatograph	✓					
Refrigerator	✓					
Freezer						
Drying Oven	✓					
Muffle Furnace	✓					
Hot Plates	✓					
Magnetic Stirrer	✓					
Desiccators	✓					
Steam Bath	✓					
Stirred Boiling Water Bath with Gabled Lid for Nitrate by Brucine Method	✓					
Centrifuge	✓					
LABORATORY APPARATUS:						
Fluoride Distillation						
COD Reflux	✓					
Kjeldahl	✓					
Kjeldahl Digester	✓					
Cyanide Distillation		✓				
Soxhlet Extraction	✓					
LABORATORY SAFETY:						
Emergency Exits	✓					
Fire Alarm	✓					
Smoke Detector	✓					
Sprinkler System	✓					
Fire Extinguishers	✓					
Fire Blanket	✓					
Emergency Lights	✓					
First Aid Station	✓					
Emergency Phone Numbers	✓					
Hazardous Materials Chart	✓					
Eye Wash Stations	✓					
Chemical Burn Stations	✓					
Safety Shower	✓					
Lab Coats	✓					
Safety Glasses	✓					
Face Shield	✓					
Respirator with Compressed Air Supply	✓	✓				
Fume Hoods	✓					
Perchloric Acid Hood		✓				
Compressed Gas Tanks Secured	✓					
Electrical Cables Secured	✓					
Is there an antidote for HF burns? e.g. A paste of MgOH and Glycerol and a saturated solution of $MgSO_4$		✓				

Form DWR-153 A
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
ACIDITY					
1. Are sample containers filled completely?	☐	☐	☐	CACD 01	
2. Are samples analyzed within 14 days of collection?	☐	☐	☐	CACD 02	
3. Is the NaOH titrant standardized against potassium biphthalate and labeled properly?	☐	☐	☐	CACD 03	
4. Are wastewater samples titrated to pH 8.3 using an electrometric endpoint?	☐	☐	☐	CACD 04	
5. If a phenophthalein indicator is used, is free residual chlorine removed with thiosulfate?	☐	☐	☐	CACD 05	
ALKALINITY					
1. Are sample containers filled completely?	☐	☐	☐	CALK 01	
2. Are samples analyzed within 14 days of collection?	☐	☐	☐	CALK 02	
3. Is the H_2SO_4 or HCl standardized against Na_2CO_3 and labeled properly?	☐	☐	☐	CALK 03	
4. Are wastewater samples titrated to pH 4.5 using an electrometric endpoint?	☐	☐	☐	CALK 04	
5. If methyl orange indicator is used, is free residual chlorine removed with thiosulfate?	☐	☐	☐	CALK 05	
BIOCHEMICAL OXYGEN DEMAND					
1. Are samples cooled to 4°C during transit and received in lab within 48 hrs of collection?	☐	☐	☐	CBOD 01	
2. Is the sodium thiosulfate standardized against potassium iodate or potassium dichromate and labeled properly?	☐	☐	☐	CBOD 02	
3. Is a seed used on chlorinated or industrial effluents?	☐	☐	☐	CBOD 03	
4. Is the depletion of unseeded dilution water blank less than 0.2 mg/l?	☐	☐	☐	CBOD 04	
5. Do the sample dilutions used to compute the BOD have depletions of at least 2 mg/l and a residual DO of 1 mg/l?	☐	☐	☐	CBOD 05	
6. Is a glucose-glutamic acid standard included with approximately every 20 analyses?	☐	☐	☐	CBOD 06	
7. Is the BOD incubator thermometer graduated in intervals of 1°C or smaller?	☐	☐	☐	CBOD 07	
8. Is chlorine removed with sodium sulfite?	☐	☐	☐	CBOD 08	
9. How many dilutions are prepared to determine BOD?					1☐ 2☐ 3☐ 4☐ 5☐
CHEMICAL OXYGEN DEMAND (Holding 28 Days)					
1. Are samples preserved with H_2SO_4 to a pH to 2?	☐	☐	☐	CCOD 01	
2. Upon receipt in the laboratory, is the sample pH measured and recorded to verify that it is preserved?	☐	☐	☐	CCOD 02	
3. Is the Dichromate reflux method used?					
a. Is the ferrous ammonium sulfate titrant standardized daily against primary standard grade $K_2Cr_2O_7$?	☐	☐	☐	CCOD 03	
b. Is 0.025 N $K_2Cr_2O_7$ used for samples below 50 mg/l?	☐	☐	☐	CCOD 04	
c. Is a blank run with each set of samples?	☐	☐	☐	CCOD 05	
d. Is at least 0.5 ml of titrant used in the titration of the excess dichromate for the majority of samples?	☐	☐	☐	CCOD 06	
e. Is $HgSO_4$ used to complex chloride?	☐	☐	☐	CCOD 07	
f. Is the automated colorimetric method used?	☐	☐	☐	CCOD 08	
g. Is the manual colorimetric method used?	☐	☐	☐		
a. Are digestion tubes heated in a block heater or oven at 150°C for 2 hrs?	☐	☐	☐		
b. Is absorbance read @ 600 nm in a spectrophotometer?	☐	☐	☐		

Form DWR-153 B
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
HARDNESS, TOTAL (Holding 6 mos.)					
1. Are samples preserved with acid (HNO_3 or H_2SO_4) to pH<2?	☐	☐	☐	CHRD 01	
2. Is the EDTA titrimetric method used?					
a. Is the EDTA titrant standardized against $CaCO_3$ and labeled properly?	☐	☐	☐	CHRD 02	
b. Is the EDTA titrant approximately 0.01M?	☐	☐	☐	CHRD 03	
3. Is the automated colorimetric (calmagite) method used?	☐	☐	☐		
4. Is the hardness calculated from Ca+Mg values determined by atomic absorption?	☐	☐	☐		
HYDROGEN ION (pH) (Analyze immediately)					
1. Is an electronic pH meter with temperature compensation used?	☐	☑	☐	CpH 01	
2. Are electrodes stored according to the manufacturer's recommendations?	☐	☑	☐	CpH 02	
3. Are the electrodes filled with sufficient quantity of electrolyte?	☐	☑	☐	CpH 03	
CONDUCTIVITY (Holding 28 Days)					
1. Are samples measured at 25°C or is a temperature correction made?	☐	☑	☐	CCON 01	
2. Has the cell constant of the conductance cell been determined and permanently recorded?	☐	☑	☐	CCON 02	
METHYLENE BLUE ACTIVE SUBSTANCES (Holding 48 Hrs.)					
1. Is MBAS being determined by the methylene blue method?	☐	☐	☐	CMBA 01	
2. Is LAS reference material available and used in the preparation of standards?	☐	☐	☐	CMBA 02	
3. Is the determination of absorbance done at 652 nm against a blank of chloroform?	☐	☐	☐	CMBA 03	
TURBIDITY (Holding 48 Hrs.)					
1. Is the nephelometric method used?					
a. Are samples with turbidity greater than 40 NTU diluted with turbidity-free water?	☐	☐	☐	CTUR 01	
b. Are sample tubes clear, colorless glass which are clean and have no scratches?	☐	☐	☐	CTUR 02	
COLOR (Holding 48 Hrs.)					
1. Is the visual comparison method used?					
a. Is interference due to turbidity removed by filtration or centrifugation?	☐	☐	☐	CCOL 01	
b. Is the pH of the sample measured and reported with the result?	☐	☐	☐	CCOL 02	
c. Are platinum-cobalt standards used?	☐	☐	☐	CCOL 03	
d. Are color disc standards calibrated against platinum-cobalt standards every 6 months?	☐	☐	☐	CCOL 04	
2. Is the spectrophotometric method used?	☐	☐	☐		
3. Is the ADMI method used?	☐	☐	☐		

AR300802

Form DWR-153 C
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
RESIDUE, (T.D.S.), (TOTAL FILTERABLE RESIDUE) (Holding 48 Hrs.)					
1. Does the desiccator have suitable dessicant and indicator?	☐	☐	☐	CTDS 01	
2. Is an analytical balance capable of weighing to 0.1 mg available?	☐	☐	☐	CTDS 02	
3. Are glass fiber filter discs used?	☐	☐	☐	CTDS 03	
4. Are samples for total dissolved solids dried at 180°C?	☐	☐	☐	CTDS 04	
5. a. Does the dissolved residue, when weighed, yield <200 mg?	☐	☐	☐	CTDS 05	
b. If not, is smaller aliquot used?	☐	☐	☐	CTDS 06	
RESIDUE, (TSS), (TOTAL NONFILTERABLE RESIDUE) (Holding 7 Days)					
1. Is the residue dried at 103-105°C?	☐	☐	☐	CTSS 01	
RESIDUE, TOTAL SOLIDS (Holding 7 Days)					
1. Is sample dried at 103-105°C until weight is constant?	☐	☐	☐		
CHLORIDE (No Pres., Holding 28 Days)					
1. Is the argentometric (silver nitrate) method used?					
a. Is the $AgNO_3$ titrant standardized against NaC1 dried at 140°C and labeled properly?	☐	☐	☐	CCLD 01	
b. Is interference due to sulfide, sulfite or thiosulfate removed with H_2O_2?	☐	☐	☐	CCLD 02	
2. Is the mercuric nitrate method used?					
a. Is the pH adjusted to 2.5?	☐	☐	☐	CCLD 03	
b. Is a 1 or 5 ml microburet used for titration?	☐	☐	☐	CCLD 04	
c. Is the NaCL standard dried at 600°C for 1 hour?	☐	☐	☐	CCLD 05	
3. Is the automated ferricyanide method used?	☐	☑	☐		4.5 2.
4. Is the ion chromatographic method used for drinking water?	☐	☐	☐		
FLUORIDE (No Pres., Holding 28 Days)					
1. Are water samples distilled?	☐	☐	☐	CFLR 01	
2. Is the specific ion electrode method used?					
a. Are both samples and standards analyzed at room temperature?	☐	☐	☐	CFLR 02	
3. Is the SPADNS method used?					
a. Is the SPADNS solution stored in an amber bottle and protected from direct sunlight?	☐	☐	☐	CFLR 03	
b. Is sodium arsenite used to remove residual chlorine?	☐	☐	☐	CFLR 04	
4. Is the automated complexone method used?					
a. Is the working color reagent prepared fresh every 3 or 4 days?	☐	☑	☐	CFLR 05	3 A. 2
CHLORINE RESIDUAL (No Pres., No Holding)					
1. a. Is chlorine residual determined by iodometric titration, DPD colorimetric or DPD titrimetric methods?	☐	☐	☐	CCLR 01	
b. In the iodometric titration is the excess reducing agent back-titrated with iodine or iodate solutions?	☐	☐	☐	CCLR 02	
c. In the DPD colorimetric method are kits with color wheels, and reagent packets used?	☐	☐	☐		
d. Is the chlorine residual determined by specific ion electrode?	☐	☐	☐		
e. Is the starch end-point method used?	☐	☐	☐		

Form DWR-153 D
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LIMITED CHEMISTRY GENERAL PROCEDURES

AMMONIA (Holding 28 Days)	NA	YES	NO		COMMENTS
1. Are samples preserved with H_2SO_4 to pH 2 at time of collection?	☐	☐	☐	CAMM 01	
2. Upon receipt in the laboratory, is the pH measured and recorded?	☐	☐	☐	CAMM 02	
3. Are samples analyzed within 28 days of collection?	☐	☐	☐	CAMM 03	
4. Is a manual distillation at pH 9.5 used?					
a. Do you use macro or micro distillation equipment?	☐	☐	☐	CAMM 04	
b. Are stills steamed with ammonia-free water prior to distillation of samples and the distillate checked for residual NH_3?	☐	☐	☐	CAMM 05	
c. Is chlorine residual removed by thiosulfate or arsenite prior to distillation?	☐	☐	☐	CAMM 06	
5. Is Nesslerization method used following distillation (for 0.05 to 1.0 MGNH_3-N/L)?					
a. Is 2 ml of Nessler reagent added to raise the alkalinity to the desired level?	☐	☐	☐	CAMM 07	
b. Is the same contact time used for samples standards and blanks?	☐	☐	☐	CAMM 08	
c. Is a 30 min. contact time allowed for low concentration samples?	☐	☐	☐	CAMM 09	
6. Is the selective ion method used (for 0.05 to 1.0 mgNH_3-N/L)?					
a. Is the pH of the sample maintained at greater than 11?	☐	☐	☐	CAMM 10	
b. Is NaOH added to samples prior to electrode immersion?	☐	☐	☐	CAMM 11	
c. Are low concentration standards run first?	☐	☐	☐	CAMM 12	
7. Is the automated phenate method used?					
a. If $HgCl_2$ is used as a preservative, is an equivalent amount added to NH_3 standards?	☐	☐	☐	CAMM 13	
b. If H_2SO_4 is used as a preservative, is H_2SO_4 added to wash water and standards?	☐	☐	☐	CAMM 14	
8. Is titration method used (for 0.05 to 1.0 MGNH_3-N/L	☐	☐	☐	CAMM 15	
a. Is H_2SO_4 0.02N?	☐	☐	☐	CAMM 16	
b. Is a blank carried through all the steps of the procedure?	☐	☐	☐	CAMM 17	

NITRATE					
1. Are drinking water samples analyzed within 24 hours of collection?	☑	☐	☐	CNAT 01	
2. Are wastewater samples analyzed within 48 hours of collection?	☐	☐	☐	CNAT 02	
3. If not, are samples preserved with H_2SO_4 to pH 2 at time of collection for NO_3, NO_2?	☐	☑	☐	CNAT 03	
4. Is the brucine method used?					
a. Are samples filtered if turbid?	☐	☐	☐	CNAT 04	
b. Is the temperature of the waterbath 95 - 100°C?	☐	☐	☐	CNAT 05	
c. Is the stock nitrate STD 100 mg/l, preserved with chloroform and kept no longer than 6 months?	☐	☐	☐	CNAT 06	
d. Is the brucine-sulfanilic acid reagent stored at 4°C in a dark bottle?	☐	☐	☐	CNAT 07	
e. Is residual chlorine removed by adding sodium arsenite solution (1 drop/0.1 mg/l)?	☐	☐	☐	CNAT 08	
5. Is the manual cadmium reduction method used?					
a. Is interference due to turbidity removed?	☐	☐	☐	CNAT 09	
b. Is a nitrate and nitrite standard passed through the column with each run to check recovery?	☐	☐	☐	CNAT 10	
c. Is the column reactivated when the value of F>0.33?	☐	☐	☐	CNAT 11	
6. Is the automated cadmium reduction method used?					
a. Is a nitrate and nitrite standard run with each batch of samples to check column efficiency?	☐	☑	☐	CNAT 12	
7. Is the automated hydrazine reduction method used?	☐	☐	☐	CNAT 13	
8. Is the ion chromatographic method used for drinking water?	☐	☐	☐		

Form DWR-153 E
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
NITRITE					
1. Are samples cooled to 4°C and anlyzed within 48 hrs. of collection if not preserved?	☐	☐	☐	CNIT 01	
2. Is the Diazotization method used?	☐	☐	☐		
a. Is the nitrite stock solution standardized against standard permanganate and labeled properly?	☐	☐	☑	CNIT 02	
b. Are turbid samples filtered through a 0.45 micron filter?	☐	☑	☐	CNIT 03	
KJELDAHL NITROGEN, TOTAL					
1. Are samples preserved with H_2SO_4 to pH 2 and analyzed within 28 days of collection?	☐	☐	☐	CTKN 01	
2. Is the 0.020 N H_2SO_4 standardized against Na_2CO_3 and properly labeled?	☐	☐	☐	CTKN 02	
3. Is the distillate from the digestion collected below the surface of the boric acid?	☐	☐	☐	CTKN 03	
ORTHOPHOSPHATE (Pres. - Filter Immed.)					
1. Are samples cooled to 4°C and analyzed within 48 hrs. of collection?	☐	☐	☐	CORP 01	
2. Is the ascorbic acid method used?	☐	☐	☐	CORP 02	
a. Is the ammonium molybdate solution stored in plastic at 4°C?	☐	☐	☐	CORP 03	
b. Is the 0.1 M. ascorbic acid stored at 4°C and prepared fresh weekly?	☐	☐	☐	CORP 04	
c. Is the combined reagent prepared daily with all reagents at room temperature prior to mixing?	☐	☐	☐	CORP 05	
PHOSPHORUS, TOTAL (Pres. H_2SO_4 to pH<2) (Holding 28 Days)					
1. Is an acid-persulfate digestion used for wastewater samples?	☐	☐	☐	CTPH 01	
2. Is the ascorbic acid method used to determine total phosphorus after the digestion?	☐	☐	☐	CTPH 02	
ORGANIC CARBON, TOTAL (Holding 28 Days)					
1. Are samples preserved with H_2SO_4 or HCl to pH 2 at time of collection?	☐	☑	☐	CTOC 01	
2. Upon receipt in the laboratory, is the pH measured and recorded?	☐	☑	☑	CTOC 02	
3. Is the combustion-infrared method used?					
a. Is inorganic carbon removed by decomposition with acid or alternatively is a correction made for the inorganic fraction?	☐	☑	☐	CTOC 03	
b. Is a methane detection technique used in place of IR?	☐	☑	☐	CTOC 04	
4. Is analysis performed within 28 days?	☐	☑	☐	CTOC 05	
5. Is the instrument being calibrated daily with at least 3 standards?	☐	☑	☐	CTOC 06	
6. Have samples been checked with potassium acid phthalate for recovery?	☐	☑	☐	CTOC 07	
7. Is an external reference sample such as E.M.S.L.Q.C. analyzed at least yearly?	☐	☑	☐	CTOC 08	
8. Are standards prepared at least monthly?	☐	☑	☐	CTOC 09	
SULFATE (Pres. - Cool to 4°C - Holding 28 Days)					
1. Is the gravimetric method used?					
a. Is silica removed by treatment with HC1 and filtering?	☐	☐	☐	CSFA 01	
b. Is the barium sulfate precipitate washed with distilled water to remove chlorides?	☐	☐	☐	CSFA 02	
c. Is the residue ignited at 800°C?	☐	☐	☐	CSFA 03	
2. Is the turbidimetric method used?					
a. Are the samples stirred for exactly 1 minute after the addition of $BaCl_2$?	☐	☐	☐	CSFA 04	

Form DWR-153 F
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY PROCEDURES

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
SULFATE – Continue					
2. b. Are both samples and standards read at 4 minutes after stirring?	☐	☐	☐	CSFA 05	
c. Are blanks used to correct for color or turbidity?	☐	☐	☐	CSFA 06	
3 Is the automated chloranilate method used?					
a. Are interferences due to Ca, Al, and Fe removed by an ion exchange column?	☐	☐	☐	CSFA 07	
4. Is the ion chromatography method used for drinking water?	☐	☐	☐		
SULFIDE (Pres. - 4°C, Zn Acetate + NaOH to pH>9 - Holding 7 Days)					
1. Is the Methylene Blue method used?					
a. Is the methylene blue solution standardized against a known solution and adjusted so that 1 drop = 1.0 mg/l sulfide?	☐	☐	☐	CSFD 01	
b. Is the titrimetric (Iodine) method used?	☐	☐	☐	CSFD 02	
SULFITE (No Preservation)					
1. Is the titrimetric iodine-iodate method used?					
2. Are samples analyzed on site?	☐	☐	☐	CSFT 01	
CYANIDE					
1. Are samples analyzed within 14 days of collection?	☐	☑	☐	CCYN 01	
2. Are samples preserved with NaOH to pH 12 + 0.6 G ascorbic acid?	☐	☐	☐	CCYN 02	
3. Upon receipt in the laboratory, is the pH measured and recorded?	☐	☐	☐	CCYN 03	
4. If chlorinated, do you remove sulfide as Cd sulfide?	☐	☐	☐	CCYN 04	
5 Is the titrimetric method used?					
6. Is a manual distillation with $MgCl_2$ done?					
a. Is the $AgNO_3$ standardized against NaCl and labeled properly?	☐	☐	☐	CCYN 05	
b Is a blank run with each set of samples?	☐	☐	☐	CCYN 06	
7. Is the colorimetric method used?					
a. Is Chloramine T prepared weekly and stored in refrigerator?	☐	☑	☐	CCYN 07	
b Is the stock cyanide solution standardized weekly against $AgNO_3$?	☐	☐	☐	CCYN 08	
OIL AND GREASE (Holding 28 Days)					
1. Are samples collected in glass containers?	☐	☐	☐	CONG 01	
2 Are samples preserved with H_2SO_4 to pH<2?	☐	☐	☐	CONG 02	
3. Is a liquid-liquid extraction with freon used?	☐	☐	☐	CONG 03	
4. Is the oil and grease content determined gravimetrically?	☐	☐	☐	CONG 04	
PHENOLS (Holding 28 Days)					
1. Are samples collected in glass containers?	☐	☐	☐	CPHN 01	
2. Are samples preserved with 1 g $CuSO_4$ and H_3PO_4 to pH<2?	☐	☐	☐	CPHN 02	
3. Upon receipt in the laboratory, is the pH measured and recorded?	☐	☐	☒	CPHN 03	
4. Are samples analyzed within [illegible] of collection?	☐	☐	☐	CPHN 04	
5 Is the colorimetric 4-AAP method with distillation used?	☐	☑	☐	CPHN 05	
6. Is the colorimetric 4AAP method for halogenated phenols used?	☐	☐	☐	CPHN 06	

AR300806

Form DWR 150 3
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY PROCEDURES

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
ALUMINUM					
1. Is the Eriochrome Cyanine R method used?	☐	☐	☐		
a. Is an EDTA complexed aliquot run as a blank?	☐	☐	☐	CALU 01	
b. Is Fe and Mn interference removed with Ascorbic acid?	☐	☐	☐	CALU 02	
c. Is F compensated for by addition of F to standards?	☐	☐	☐	CALU 03	
d. Are interferences due to polyphosphates and alkalinity removed by treatment with H_2SO_4?	☐	☐	☐	CALU 04	
ARSENIC					
1. Is the silver diethyidithocarbamate method used?	☐	☐	☐		
a. Are samples preserved with H_2SO_4 to avoid negative interference from HNO_3?	☐	☐	☐	CARS 01	
b. Is a lead acetate scrubber used?	☐	☐	☐	CARS 02	
BERYLLIUM					
1. Is the Aluminon method used?	☐	☐	☐		
a. Is EDTA added to eliminate Al, Co, Cu, Fe, Mn, Ni, Ti, Zn and Zr interferences?	☐	☐	☐	CBER 01	
BORON					
1. Is the Curcumin method used?	☐	☐	☐		
a. Is water bath maintained at 55 ± 2°C?	☐	☐	☐	CBOR 01	
b. Is Curcumin prepared fresh weekly and refrigerated?	☐	☐	☐	CBOR 02	
c. Is interference due to the hardness removed by ion exchange softening of final sample?	☐	☐	☐	CBOR 03	
d. Is the boiling time carefully controlled for both samples and standards?	☐	☐	☐	CBOR 04	
CADMIUM					
1. Is the Dithizone method used?	☐	☐	☐		
a. Are samples digested with HNO_3, H_2SO_4 or HNO_3, $HClO_4$?	☐	☐	☐	CCAD 01	
b. Is chloroform supplied in containers with metal lined caps?	☐	☐	☐	CCAD 02	
c. During the final extraction, is the room darkened or amber glassware used?	☐	☐	☐	CCAD 03	
CALCIUM					
1. Is the EDTA titrimetric method used?	☐	☐	☐		
a. Is the EDTA titrant standardized against $CaCO_3$?	☐	☐	☐	CCAL 01	
b. Is EDTA titrant approximately 0.01 M and labeled properly?	☐	☐	☐	CCAL 02	
c. After the pH is raised to 12-13, is the sample titrated immediately?	☐	☐	☐	CCAL 03	
CHROMIUM					
1. Is the Diphenylcarbazide method used?	☐	☐	☐		
a. Is $KMnO_4$ used to oxidize CrIII to CrVI?	☐	☐	☐	CCHR 01	
b. Is permanganate interference removed by reduction with azide?	☐	☐	☐	CCHR 02	
c. Are standards processed in the same manner as samples?	☐	☐	☐	CCHR 03	

Form DWR-153 H
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY PROCEDURES

LIMITED CHEMISTRY GENERAL PROCEDURES

	NA	YES	NO		COMMENTS
CHROMIUM VI (Pres. - Cool 4°C - Holding 24 Hrs.)					
1. Is the analysis performed in the field?	☐	☐	☐		
2. Is the sample screened for Cr^{+6} using a total chromium determination?	☐	☐	☐		
COPPER					
1. Is the neocuproine method used?	☐	☐	☐		
a. Is glass redistilled or deionized distilled water used?	☐	☐	☐	CCOP 01	
b. Are samples digested with H_2SO_4 and HNO_3 to remove cyanide and sulfide interference?	☐	☐	☐	CCOP 02	
c. Is the blank treated in the same manner as the sample?	☐	☐	☐	CCOP 03	
2. Is the bicinchoninate method used?					
IRON					
1. Is the phenanthroline method used?					
a Are reagents stored in glass stoppered bottles?	☐	☐	☐	CFER 01	
b. Are working-standard iron solutions prepared daily?	☐	☐	☐	CFER 02	
MANGANESE					
1. Is the persulfate method used?					
a. Is interference from NaCl removed by addition of mercuric sulfate?	☐	☐	☐	CMAN 01	
b. Is the manganese standard aged in sunlight or heated, then standardized against sodium oxalate?	☐	☐	☐	CMAN 02	
2. Is the periodate method used?					
a. Are reducing agents removed or destroyed before the periodate oxidation?	☐	☐	☐	CMAN 03	
b. Is phosphoric acid added to complex ferric iron?	☐	☐	☐	CMAN 04	
c Are corrections for turbidity or interfering color made?	☐	☐	☐	CMAN 05	
SODIUM					
1 Is the flame photometric method used?					
a. Is particulate matter removed by filtration?	☐	☐	☐	CSOD 01	
b Are all solutions stored in plastic bottles?	☐	☐	☐	CSOD 02	
SILVER					
1. Is the Dithizone method used?	☐	☐	☐		
a Is the stock dithizone solution extracted with CCl_4 to remove Cu then stored in the dark or in an amber bottle?	☐	☐	☐	CSIL 01	
b Is all glassware washed with chromic acid and 1 + 1 HNO_3 then treated with a silicone coating?	☐	☐	☐	CSIL 02	
c Are urea solutions discarded when a red film develops?	☐	☐	☐	CSIL 03	
VANADIUM					
1. Is the Gallic Acid method used?	☐	☐	☐		
a Is there a water bath capable of 25 ± 0.5°C available?	☐	☐	☐	CVAN 01	
b Is the absorbance measured exactly 60 min. after the addition of gallic acid?	☐	☐	☐	CVAN 02	
c Are interferences due to Cu and Fe eliminated by dilution?	☐	☐	☐	CVAN 03	
ZINC					
1. Is the dithizone method used?	☐	☐	☐		
a. Is the NH_4OH solution made from NH_3 or by redistilling NH_4OH?	☐	☐	☐	CZIN 01	
b Is the dilute sodium sulfide solution prepared fresh just before use?	☐	☐	☐	CZIN 02	
c Are blanks reproducible?	☐	☐	☐	CZIN 03	

Form SW-
5/85

OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

ATOMIC ABSORPTION AND METAL PROCEDURES

	NA	YES	NO	COMMENTS
Does the instrument have the following				
1. Background Correction - Continuum Source		☑		
2. Stripchart Recorder		☑		
3. Double Beam		☑		
4. Graphite Furnace		☑		
5. Auto Sampler		☑		
6. Are trace metals samples preserved with HNO_3 to pH of 2 at time of collection? (Holding: Hg - 28 days, others 6 mos.)		☑		CAAS 01
7. Are samples for dissolved metals filtered through 0.45 u membrane filter and the filtrate preserved with HNO_3?		☑		CAAS 02
8. Is an acid digestion done on total metals samples for drinking water?		☑		
9. Upon receipt in laboratory is sample pH measured & recorded?		☑		CAAS 03
10. Is deionized-distilled or double-distilled water used?		☑		CAAW 04
11. Is glassware acid washed?		☑		CAAG 05
12. Are all the required lamps available for parameters requested?		☑		
13. List lamps available and underline multi-element lamps.		☑		CAAL 06
14. Are all the following fuel mixtures available? Air-Acetylene Nitrous oxide-acetylene Argon-hydrogen (Hydride Generation - $Zn+SnCl_2$) *Circle if not available*		☑		CAAC 07
15. In the graphite furnace method, is each sample matrix examined for interference effects by the method of standard additions?			☑	CAAM 08
16. Are 10% check standards run for the graphite furnace method to monitor when the furnace should be changed?		☑		
17. For Cd Cr, Pb and Zn are low level samples extracted into MIBK after chelation of the desired metal with APDC or is $CHCl_3$ used as a solvent for PDCA extraction?	☑			CAAM 09
18. In the determination of low level chromium, is Cr III oxidized to Cr VI prior to extraction?	☑			CAAM 10
19. Are Se and As converted to the gaseous hydride with $SNCl_2$ + Zn metal and determined in an argon-hydrogen flame?	☑			CAAM 11
20. Is a nitrous oxide flame used for Al, Ba, Be, Mo, Ti, Sn & V?		☑		CAAM 12
21. If Ba is determined using an air-acetylene flame, is La added to both samples and stds?	☑			CAAM 13
22. For Al, Ba, Na and Ti analysis, is K added to both samples and standards to eliminate ionization of the measured species?		☑		CAAM 14
23. For Ca and Mg analyses, is La added to both samples and standards to eliminate interference?				CAAM 15
24. For Cr by graphite furnace and Mn and Fe by direct aspiration analyses, is Ca added to both samples and standards to eliminate interference?	☑			CAAM 16
25. Is apparatus available for the determination of Hg by the cold vapor technique of Hatch and Ott?		☑		CAAM 17
26. Is a $KMnO_4$ trap, some type of scrubber or venting up the hood used in the apparatus for flameless Hg determination?		☑		CAAM 18
27. If only dissolved mercury is to be determined, is the sample filtered through an all glass apparatus before the acid is added?	☑			CAAM 19
28. Is persulfate added when determining total Hg?				CAAM 20
29. Is $KMnO_4$ added until dark color persists?				CAAM 21
30. Are the samples heated for 2 hours at 95°C in a water bath?				CAAM 22
31. Is mercury reduced with $SnCl_2$ or $SnSO_4$?				CAAM 23
32. For Mo and V analyses is Al added to both samples & standards?	☑			CAAM 24

Form DWR-155 B
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

ICAP AND DCP PROCEDURES

	N/A	YES	NO	COMMENTS
1. Does the instrument have background correction?	☐	☑	☐	
2. If DCP, does the instrument have a 3 electrode system, not a 2 electrode system?	☐	☐	☐	
3. Does the instrument have computer control?	☐	☑	☐	
4. Is a peristaltic pump used with the system?	☐	☑	☐	
5. If DCP, are enhancers used?	☐	☐	☐	
6. Does the instrument have temperature control or is the environment temperature and humidity controlled?	☐	☑	☐	
7. Are the acids used trace metal grade?	☐	☑	☐	
8. Is an instrument check standard run 10% of time to check for impurities and spectral interferences?	☐	☑	☐	
9. Are 10x Instrument Detection Limit spikes run (1 every 20)?	☐	☑	☐	
10. Is sample digestion documented?	☐	☑	☐	
11. Is instrument monitored weekly for stability?	☐	☑	☐	
12. Is a profile check run every 4 hours if not documented or at least once a shift and documented?	☐	☑	☐	
13. If there is no peristaltic pump used are samples filtered?	☑	☐	☐	
14. Is a white light and a dark current check run at least every 3 months?	☑	☐	☐	
15. Is the correlation coefficient > 0.9999?	☐	☑	☐	
16. Is a linear range analysis curve run over the range of interest to check for interferences?	☐	☑	☐	
17. Do you have welding goggles to look at the plasma? (EPA 79 manual)	☑	☐	☐	
18. Are the correct lines being used?	☐	☑	☐	
19. Do you keep an instrument maintenance log?	☐	☑	☐	
20. Do you have EPA check samples for interference?	☐	☑	☐	
21. If the argon is not liquid, how pure is it?	☐	☑	☐	

AR300810

Form DWR-156
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH
ON-SITE LABORATORY EVALUATION

RECORD-KEEPING AND CALIBRATION PRACTICES

RECORD-KEEPING

	NA	YES	NO		COMMENTS
1. Is the temperature of all B.O.D. incubators recorded daily?	☑	☐	☐	CREC 01	
2. Is the temperature of all drying ovens recorded daily?	☐	☑	☐	CREC 02	
3. Is the temperature of all refrigerators recorded daily?	☐	☑	☐	CREC 03	
4. Are the laboratory thermometers calibrated against an NBS traceable thermometer and documented?	☐	☑	☐	CREC 04	
5. Is the analytical balance checked monthly with two class S weights, one in the mg range, and one in the gram range, and the data recorded?	☐	☑	☐	CREC 05	
6. Is a record available of yearly service on the analytical balance?	☐	☑	☐	CREC 06	
7. Is the pH meter checked daily, or before use, by setting the meter to pH7 then measuring and recording pH's approximately 4 and 10?	☐	☑	☐	CREC 07	
8. Is the conductivity of the distilled water supply (satisfactory is conductivity of 2.0-0.5 umho/cm. at 25°C.) checked daily and the data recorded?	☐	☑	☐	CREC 08	
9. Is the conductivity meter calibrated daily against a 0.001 M KCl solution and the data recorded?	☐	☑	☐	CREC 09	
10. Is the turbidimeter calibrated daily, or before use, with a 40 NTU formazin standard and the data recorded?	☑	☐	☐	CREC 10	
11. Is the DO meter calibrated weekly against the Winkler method and the data recorded?	☑	☐	☐	CREC 11	

CALIBRATION PRACTICES

	NA	YES	NO		
1. Regarding calibration curves, are the following practices in use?					
a. Graph is labeled with parameter, date of calibration and the axes are properly identified as to absorbance or percent transmission and concentration units.	☐	☑	☐	CCAL 01	
b. Computer read-out for regression analysis lists parameter, date of calibration, equation of curve and correlation co-efficient.	☐	☑	☐	CCAL 02	
c. Results reported are within the range of the highest and lowest standard.	☐	☑	☐	CCAL 03	
2. Regarding manual spectrophotometric calibration curves, are the following practices in use?					
a. A minimum of 5 standards and a blank, with 3 measurements at each point are used to generate the curve.	☐	☐	☐	CCAL 04	
b. A new curve is generated every 6 months.	☐	☐	☐	CCAL 05	
c. The working curve is checked daily or with each run by alternating a low and a high standard and the data are recorded.	☐	☐	☐	CCAL 06	
3. Regarding calibration curves for auto-analyzer analyses, are the following practices in use?					
a. The baseline is set using appropriate reagents and distilled water and is checked at the end of the run.	☐	☑	☐	CCAL 07	
b. A minimum of 5 standards are used to generate the curve.	☐	☐	☑	CCAL 08	
c. A new curve is generated for each run.	☐	☑	☐	CCAL 09	
d. A marking standard is included with every 20 samples.	☐	☑	☐	CCAL 10	
e. The calibration curve is checked at the end of each run with a low and a high standard and the data are recorded.	☐	☑	☐	CCAL 11	
4. Regarding atomic absorption calibration curves, are the following practices in use?					
a. Working standards are prepared fresh with each run.	☐	☑	☐	CCAL 12	
b. A minimum of 4 standards and a blank are used to generate a curve.	☐	☑	☐	CCAL 13	
c. A new curve is generated for each run.	☐	☑	☐	CCAL 14	

Form DWR-157
5/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF SCIENCE AND RESEARCH

ON-SITE LABORATORY EVALUATION

QUALITY CONTROL AND DATA HANDLING

	NA	YES	NO		COMMENTS
QUALITY CONTROL					
1. Regarding standard solutions, are the following practices in use?					
a. A notebook record is available describing the preparation and standardization of stock standard solutions.	☐	☑	☐	CQCS 01	
b. Are purchased standards checked before use?	☐	☑	☐	CQCS 02	
c. Stock standard solutions and working standards are labeled with reagent, concentration, date prepared and initialed.	☐	☑	☑	CQCS 03	initial
d. ACS grade or analytical reagent grade chemicals dated when received, are used in the preparation of standard solutions.	☐	☐	☑	CQCS 04	
2. Regarding the monitoring of precision, are the following practices in use?					
a. Approximately 1 synthetic known control sample is included with every 20 analyses, and the data presented on an X bar control chart.	☐	☑	☑	CQCP 01	
b. Approximately 1 duplicate of a natural sample is included with every 20 analyses, and the data presented on an R bar range control chart.	☐	☑	☐	CQCP 02	
3. Regarding the determination of chemical recovery, are the following practices in use?					
a. A tabulation and control chart are available for recovery data obtained from spiked natural samples (1 for every 20 analyses).	☐	☑	☐	CQCP 03	
4. Is there an in-house quality control manual outlining Q.C. practices?	☐	☑	☐	CQCP 04	
DATA HANDLING					
1. Regarding sampling procedures and data handling, data reporting and data retrieval procedures, are the following practices in use?					
a. Are sample collectors supplied with properly labeled containers, preservatives and sampling instructions? (Get copy of instructions).	☐	☑	☐	CDAT 01	
b. Is there a lab daily work sheet listing sample number, date, time, location, preservation, analyses requested, field measurements by sampler, sampler's initials, date and hour received by lab, analysis, date and hour of analysis, analyst's initials?	☐	☑	☐	CDAT 02	
c. Is there a bound lab notebook for recording raw data, calculations, or other notes.	☐	☑	☐	CDAT 03	
d. Is raw data kept for 5 years?	☐	☑	☐	CDAT 04	
e. Is enforcement data kept for 5 years?	☐	☑	☐	CDAT 05	
f. Is there an in-house methods manual available to all analysts?	☐	☑	☐	CDAT 06	
g. Is there a record of chain of custody?	☐	☑	☐	CDAT 07	
h. Is there a chain of custody procedure?	☐	☑	☐	CDAT 08	

AR300812